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Climate and Artistic Development.

In some remarks at the opening of the Wokingham Loan Exhibition last week, Mr. Walter, M.P., promulgated the theory that the development of artistic taste and power in a nation was, to a great extent at any rate, dependent upon geographical position and climatic influence. At all events, if he did not go so far as to say that a favourable and bright climate produced art, he inferred that a climate of the opposite nature checked and hindered it. The idea, of course, is not new, more especially with those who are given to look for the ultimate basis of intellectual movements in a philosophical spirit; but it was a little unusual and unexpected to find this climate theory made part of a popular address on an every-day ceremonial occasion of the kind referred to. We were exposed, Mr. Walter remarked, to great competition with foreign countries who had hitherto excelled us; "and unless the taste of the country could be improved we could not expect to hold our own against the productions of France, Italy, and other countries, where taste came by greater length of cultivation or by greater natural advantages, because there was no doubt that the people living in this country had great natural disadvantages as compared with the natives of other countries. Living under the somewhat gloomy sky of England, with the phlegmatic temperament of Englishmen, they had little chance of gaining the refinement of those who lived under brighter skies. So much was that the fact that he had seen it stated, on the authority of the Blue Books, that even Frenchmen who came over to impart their ideas and knowledge to English students had found that a long residence in this country had the effect of taking out of them a good deal of the artistic power which they possessed."

This last sentence we can hardly imagine was intended to be taken quite seriously, in spite of the reference to the formidable authority of "Blue Books" in regard to the decline of foreign artistic genius when transplanted to these shores. The statement reads as if it came in evidence from some hereditary haters of "*perfide Albion*," who attributed to her blighting influence every difficulty of their career; like the country gentleman in the *Spectator*, who thought there had been no good weather since the Whigs came into power. That a certain French painter of Society pictures, who has domesticated himself with us, does not paint as well as he used, may be urged, perhaps, as a practical proof of the correctness of Mr. Walter's view; we ourselves should be inclined to attribute the decadence (perhaps only temporary) to the carelessness of an artist a little spoiled by success. But as to the general view, independently of this surprising Blue-book testimony, that artistic power is very largely dependent upon climatic influences,—what of it? Is it in the main true or not? The question is rather important; for, if it be so, to what end are art-schools and Kensington Museums against the preponderating force of Nature? It is Mrs. Partington and the Atlantic over again.

The conclusion we come to on the point will perhaps depend a good deal on what we agree to comprehend under the term "Art." If we take it as including every kind of creation and æsthetic expression, comprehending poetry and drama as well as plastic arts, we should find a good deal of difficulty in the way of Mr. Walter's theory. Not only is Shakspeare generally admitted to be supreme among poetic creators, in variety and force of imaginative power, but he is beyond many southern poets in warmth and richness of style and imagery. The tragedies of the Italian Alfieri are as cold as ice compared with "Lear" and "Othello." "Juliet" is full of all the warmth of a southern nature; and this intensity of feeling and expression is even more prominently developed in others of our dramatists; Webster and Marlowe, for example. The names of Byron, Shelley, and Keats, in modern times, add force to the conviction that we must, at all events, leave poetry out of the category of arts influenced by climate. If we come to music, it might seem that England offered an instance of the truth of the theory. We are not by any means a music-producing nation; and in regard even to our anonymous national melodies, it was remarked by a foreign composer, on hearing one of these, that he should have known it to be English, "it was so cold and destitute of feeling." This is the characteristic of English national melodies; there is no passion in them. But if we were to attribute this to the direct influence of climate, we should be brought up by the consideration of the different character of the Irish national tunes, which are wild in expression and full of pathos, though under much the same climatic influences; or by the recollection of the intensity and fire of expression which characterise Polish music, under no more favourable national influences than our own. So we must put music on one side. And if this art and poetry are obviously not dependent upon genial climatic influences for their development or their intensity of expression, we must conclude that any climatic influence in regard to art must be looked for rather as affecting some details in its development than as hindering or promoting the innate power and genius for art-production.

There is, probably, a direct influence in climate on the general characteristics and manners and external appearance of a people who have lived for generations under its influence. Probably we may go so far as this with Mr. Walter, that a people living in warmth, comfort, and sunshine, are more likely to become beautiful in appearance, and to love and care about outward beauty, than those who are always contending with inclement elements and consequent privation, and a hard struggle for existence. Heine, in his little poem, "Das Meer," where he supposes a youth and a maiden seated by the sea, and indulging in fancies about the different lands to which the ships are sailing, draws the distinction in two concentrated verses between the inhabitants of the tropical and the cold climate:—

> "Am Ganges duftet's und leuchtet's,
> Und Riesenbäume blüh'n,
> Und schöne, stille Menschen
> Vor Lotosblumen knie'n.
>
> "In Lappland sind schmutzige Leute,
> Plattköpfig, breitmäulig und klein;
> Sie kauern um's Feuer und backen
> Sich Fische, und quäken und schrein."*

There are extreme instances of the undoubted fact that on the whole the human growth, like other growths, luxuriates under warmth and light, and is stunted under the influence of cold and bleak sunless skies; just as, on a smaller scale, the influence of a well- or ill-lighted room tells on its inhabitants, as was pointed out in Mr. Carl Pfeiffer's excellent and practical paper on "The Sanitary Influence of Light," reprinted in the last number of the *Builder*. And body and mind are too intimately connected for the condition of the one not to act upon the other, and influence more or less the character of work which may at first sight seem very little connected with corporeal conditions at all. Certainly we should hardly expect the art of the Laplanders and of the Hindoos to have much resemblance, any more than their growth and aspect as specimens of humanity. But if we come to try to define this too much, and to decide what particular influence this or that climate has upon artistic production, we are soon landed in contradictions and propositions which cancel one another. In Longfellow's prose tale, "Kavanagh," an amusing *reductio ad absurdum* is given of this kind of thing, no doubt based on what the poet had heard from uncongenial spirits among his own countrymen. A "prospector" of a new national magazine called on the schoolmaster, who is one of the personages of the story:—

"'I think, Mr. Churchill,' said he, 'that we want a national literature commensurate with our mountains and rivers,—commensurate with Niagara, and the Alleghanies, and the Great Lakes!"

'Oh!'

'We want a national epic that shall correspond to the size of the country; that shall be to all other epics what Banvard's panorama of

* "On the Ganges are light and fragrance,
And giant trees are in flower,
And beautiful silent men
Kneel 'neath the Lotos bower.

In Lapland are dirty folk,
Flat-headed, wide-mouthed, and small;
They cower o'er the fire and bake
Their fish, and jabber and squall."

the Mississippi is to all other paintings,—the largest in the world.'

'Ah!'

'We want a national drama, in which scope enough shall be given to our gigantic ideas, and to the unparalleled activity and progress of our people!'

'Of course.'

'In a word, we want a national literature altogether shaggy and unshorn, that shall shake the earth, like a herd of buffaloes thundering over the prairies!'

'Precisely,' interrupted Mr. Churchill; 'but,—excuse me,—are you not confounding things that have no analogy? . . . . . A man will not necessarily be a great poet because he lives near a great mountain; nor, being a poet, will he necessarily write better poems than another because he lives nearer Niagara.'

'But, Mr. Churchill, you do not certainly mean to deny the influence of scenery on the mind.'

'No; only to deny that it can create genius. At best, it can only develop it. Switzerland has produced no extraordinary poet; nor, as far as I know, have the Andes or the Himalaya Mountains, or the Mountains of the Moon in Africa.'"

The absurdity of the theory as applied by the interlocutor in this little scene is of course obvious to every one; but the application of Mr. Walter's theory to art would lead to something very like this, if followed out unreservedly to its logical conclusions.

It has been implied, however, that, with certain reservations, there is a relation between climatic influence and art. But if we look at the facts, we shall probably come to the conclusion that this amounts to very little more than a determination of the taste in favour of a greater or less richness of decoration, especially in regard to colour, and an influence upon the treatment of detail in reference to its effect under certain lights. The degree in which architectural style, in all cases in which it has been untrammelled by fashion, has been influenced by this cause, is of course too obvious, and has been too often dwelt upon in the columns of the *Builder*, to need more than a word of passing reference; but it may just be observed that the influence of climate on this art has resulted merely in distinctions of architectural treatment, not in any particular advantage of one style over another in æsthetic beauty or fitness, or in grandeur of effect. We may take the Moorish, the Greek, and the northern Gothic styles as three typical examples of architecture, showing very distinctly the influence of climate: the first being marked by that exuberance in colour and detail which seems to belong peculiarly to tropical art, where a love for what is bright and glowing and full of colour seems a part of the whole habitude of life; the second, the Greek, showing that delicacy of detail and contour which could only be effective in a very clear air and under a bright sky; the Gothic exhibiting, in its deep mouldings and shadows, the natural result of the effort to make architecture effective in a dull climate and thick atmosphere. The differences in these styles, which may really be said to be almost directly traceable to climatic influence, are very marked, but they are differences of kind rather than of degree. Most architectural critics would probably concur in thinking that the northern Gothic, considered purely as architecture, or the art of expressive building, has achieved greater things than any other style of architecture erected under what would be supposed, on the theory we are discussing, to be more favourable climatic conditions.

If we look at painting, we shall again find it difficult to say that climate exercised a marked and unmistakable influence in developing or depressing artistic power. We have the fact of the great era of painting having developed in Italy; but this was on the very same soil and under nearly the same climatic conditions which surrounded the Roman progenitors of the cinquecento Italians,—those very Romans whom Mr. Walter, in the course of his address, cited as an example of a people devoid of artistic feeling or imagination, curiously overlooking the obvious contradiction which this fact gave to his climatic theory. Even landscape painting, which one might suppose to be specially connected with or influenced by climate and scenery, only very partially illustrates the position. Greek landscape appears to have had no artistic existence; Orientals, one and all, seem, so far as we know, absolutely unable to feel or to represent landscape in art. None of the greatest landscape-painters belong to Italy; and (to clinch the matter) Turner was an Englishman.

If we come to decorative work and colour, there,—and, it may be said, there only,—we seem to find something like a distinct and obvious relation between climate and artistic success. Tropically situated people seem to feel intuitively the beauty and the harmony of rich colouring in a way which by northern artists is, except in rarer instances, only painfully acquired by deliberate study, if at all. In regard to the mass of people in northern Europe, beyond the circle of professed artists, it may be said that, for the most part, it never is acquired; and that while an African or an Italian woman, with no art-education or culture, will intuitively select harmonious colouring, it is impossible ever to predict in what harsh and inharmonious combination a lady of modern Europe may not, even with deliberation and intention, attire herself. It seems to be really the fact that a heated tropical climate, which brings out, as one may say, a great deal of bright and varied colour in nature, leads to an intuitive love of such colouring, and a natural perception of its conditions. The other fact, that Oriental ornamental work is mostly superior to Western work, can hardly be attributed to direct climatic influence, save that perhaps we may conclude that the exuberance of animal and vegetable life under a tropical sun has a kind of counterpart in a tendency to exuberance of fancy in the human subject. But, in fact, it is probable that the fancy and richness of Oriental ornamental work is due to climatic influence, if at all, only in a secondary way. The more luxurious conditions of life under such a climate leave, perhaps, more time and inclination for the elaboration of decorative art, one of the ornaments rather than of the serious objects of life; and, indeed, a good deal of Oriental decorative work may be considered to be not merely exuberant but extravagant, quite overrunning the boundaries of what is truest and most refined in art, and verging towards the grotesque. The superiority of Oriental decorative work over "the tawdry things seen in English shops," alluded to by Mr. Walter, is indubitable; but it must be remembered that English decorative art was not always tawdry. The very same country and race produced at one period metal-work which we now greatly admire. And modern French ornament, which Mr. Walter seemed to regard as superior to ours, really contains quite as much that is tawdry, meretricious, and vulgar, as our own jewellers' and other shops can show: the workmanship is perhaps better; but in regard to good taste there is little to choose, and no reason for us to humble ourselves before the Parisian art workman.

One remark at the close of Mr. Walter's address at Wokingham we noticed with some interest, inasmuch as it was of a character not usual in addresses delivered on such occasions. It is by no means our practice or our province to under-rate the influence of art in raising the tone of society and giving interest to life; from certain points of view, and taking the word in its broadest sense, we may echo the sentiment of Goethe, "Happy is he who in early life has known what *art* means." But so much passes for art at present which in the higher sense is hardly worth the name, and so much mere high-sounding verbiage is constantly used, on occasions like the one we have been referring to, attributing to art, or to "the fine arts," every possible good that humanity is capable of enjoying, that it is really rather refreshing to find a speaker original enough to close his remarks on such an occasion with a hint that possibly, after all, art is not the whole of life; that there may even be a higher mission for a nation than to be reckoned foremost in artistic production. Mr. Walter cited a passage from Virgil in regard to the political rather than artistic greatness of Rome, and suggested that possibly this also was the part of England to take the lead in great political and moral movements rather than in points of artistic taste. If this be so, perhaps we may connect this fact also with climatic influence, according to Kingsley's theory of the influence of the "hard grey English weather" in forming the English character. A thoroughly balanced life would have both, no doubt; but if that were impossible, certainly moral and political greatness, with some deficiencies of taste, would seem a more healthy state of things than the possession of all the artistic wealth of the Renaissance period, along with its moral corruption and ingrained duplicity. At all events, the suggestion is, under the circumstances in which it was made, sufficiently unusual and original to be worth calling attention to; nor is it out of keeping, it may be said, with the objects and principles which have been advocated in the columns of this journal, in which it may fairly be claimed that the moral importance and influence of architecture, in the provision of healthy dwellings and the sanitary arrangement of towns, as the physical basis of a healthy moral life, whether individual or national, have always been kept prominently in view.

PRACTICAL INFORMATION AS TO SANITARY PROCESSES.*

MESSRS. ROBINSON and Mellis have to some extent performed a service of which we have long since intimated the need. It is, indeed, according to our view, one of the simplest and most important functions of the Local Government Board which has thus been left to two private professional men to fulfil. To inform the Local Sanitary Boards throughout the country of the steps taken in each locality,—of the principles adopted, the means employed to carry them out, the cost incurred, and the result attained, should have been, we have more than once ventured to suggest, a duty annually discharged by a competent officer of the Local Government Board. How exertions were frittered away; how expenses were incurred again and again; how experience was acquired, paid for, and disregarded; how every one was left to go his own way with the very minimum of help and advice, we have only too often deplored. In 1874 the Corporation of Rochdale, as Messrs. Robinson and Mellis mention in their preface, collected, and published in a tabular form, what was being done by other towns. During the session of 1875 a return of a similar kind was called for in the House of Lords by Lord Rosebery, and it was published in March of the following year. We have before us the return moved for by Mr. Solater Booth, and ordered by the House of Commons to be printed on the 11th August, 1875; showing the several nuisances reported to, and dealt with by, the several urban and rural sanitary authorities in England and Wales in 1874, and the estimated cost of sanitary structural works, undertaken during the same year. Sixty-one pages are occupied with these details, of which, whatever may be their value as indicating the activity or the enterprise of the various authorities, there is not a line that would guide any one as to the choice of measures to be adopted. The reports under the Public Health Act are generally open to the same objection. The writers lose themselves in details, and seem utterly unaware that there is a general question of primary public interest,—for the solution of which what is most requisite is the collection of broad facts. The Society of Arts held a conference, in May, 1876, on the health and sewage of towns—the proceedings of which were given in our columns, with remarks as to the numerous inquiries of the same kind which had been dispersedly made up to that time, and the want of a general synoptical view of the information actually collected from so many various sources. The reports of the Council of the Association for Preserving the Rivers and Locks of Scotland from Pollution, dated 1875, and the Reports of the Rivers Pollution Commissioners, are cited by our authors. So are the minutes of the proceedings of the Institution of Civil Engineers, to which we have lately called attention. Last comes the report of the Committee appointed in 1875 by the Local Government Board to inquire into the several methods of treating town sewage, to which, as we have lately seen, Mr. Bailey Denton has raised objections in his recent work. Messrs. Robinson and Mellis observe with justice, "Valuable as is the matter brought together in these publications, it is not in a form which can be utilised by sanitary authorities." The object of the work before us, then, is to review and arrange the results thus obtained, pointing out inferences for the guidance of those who have to deal with the refuse of towns. The authors incidentally refer to their own experience of the subject. But the chief value of the book is its impersonality. We have continually had to deplore the intrusion of some crotchet, hobby, or personal craze, into works that had involved much labour, and which included much informa-

* Purification of Water-carried Sewage. Data for the Guidance of Corporations, Local Boards of Health, and Sanitary Authorities. By Henry Robinson, M.Inst.C.E., and J. C. Mellis, Assoc.Inst.C.E. London: Smith, Elder, & Co. 1877.

tion. In all these cases the utility of the tale told is impaired or destroyed by the moral appended to it by the narrator, or, still more disastrously, by the moral which he attempts to insert between the lines of the text. What we want is, facts, so collected, so described, and so arranged, that they shall speak for themselves. And certainly the nearest approach that has yet been made, so far as we are aware, to that important desideratum, is to be found in the volume before us.

One chief defect of the book, as it occurs to the inconvenience of the writer who proceeds to analyse it, and as it is therefore likely to occur to the persons who recur to it for information, is the want of a distinct index, or list of towns, referring to the page in which the name of each may be found. There is, it is true, a general index, but that is another thing. From a perusal of the book, we come to the conclusion that the experience of about 166 towns has been collected. But some names are referred to under several heads. The difficulty thus experienced by a reviewer—tolerably well versed in the subject—is likely to deter many readers from obtaining as much information from the book as it really contains. In the case of the work reaching future editions,—and something of the sort ought to be published year by year,—it will be well for the authors to prefix a full and well-arranged table of contents, and also to add, in a tabular form, a list of towns of which the proceedings have been described, with references to the different pages in which the names occur.

The book inquires into the experience gained in the several places described in methods classed under the heads precipitation, irrigation, filtration, and discharge into the sea. An appendix contains chemical analyses of the results of various processes. There are tables showing the cost of different modes of treatment. In twenty-seven places irrigation has been adopted. The average cost of the process has been 7*l.* 16*s.* 4½*d.* per million gallons of sewage; the highest cost having been 26*l.* 7*s.* 5*d.* per million gallons at Eton, and the lowest, 5*s.* 9½*d.* for the same quantity at Cheltenham. In five places precipitation has been employed, and the tabulated result yields an average of 4*l.* 18*s.* 4*d.* per million gallons. For discharge into the sea the sole instance of Brighton is found in the tables. The cost has been 5*l.* 9*s.* 7*d.* for the same unit. Instances of filtration are not tabulated. The chapter on this subject only contains nine pages. It refers to thirty-eight towns. But the remark, "excepting in laboratory experiments, and a few instances upon a very small scale, filtration of crude or untreated sewage apart from irrigation has never yet succeeded," with which the chapter begins, possibly gives the reasons for this slight treatment of this part of the subject. It would, however, have much added to the permanent value of the book if statistical details had been collected as to these asserted failures; and if the attempts at this mode of treatment had been exhibited both as to their financial results, and as to their chemical want of results, as distinctly as is done with regard to other methods of procedure. A fourth table shows the proportion of land used for irrigation purposes, to a daily flow of one million gallons of sewage at thirty-two of the principal places where the irrigation system has been adopted, and also indicates the nature of the soil. The variation of proportions shown by this table is such as to demand explanation. At Kendal 130 acres of land, consisting of sand, loam, and boulders, is allowed for a daily flow of one million gallons of sewage. At Watford 1,090 acres are allotted to the same purpose. Personal acquaintance of old date with the neighbourhood of Watford enables us to remark that the gravel found in that vicinity is of the best description. It occurs in pot-holes on the surface of the upper chalk; and consists of a sharp, red, silicious sand, with blue and red pebbles interspersed. Unless it be from the fact of its extreme compactness when undisturbed, we know of no material anywhere that we should expect to act with greater efficacy for the oxidation of sewage. The soil at Kendal is returned "sand, loam, and boulders," in the table before us. We turned to Mr. Bailey Denton's description of the works at this place for some more specific information as to the geological character of the soil, but in vain. There is a note in the table, "exceptionally favourable formation of land, and very dilute sewage." But what is wanted is exact information, especially when we find a proportion of eight to one under circumstances of apparently very similar character.

A hundred and seventeen pages, out of the 214 which compose the book, deal with the two questions of precipitation and irrigation. Precipitation, or chemical treatment of water-carried sewage, requires, the authors justly remark, consideration under four several heads. These are,—(1) mechanical straining, so as to remove the larger portions of refuse; (2) chemical treatment and subsidence; (3) disposal of the precipitated matter; (4) filtration of the effluent water. In fact, these four steps in the process of disinfection recur under whatever head the main process is ranked. Nor does it appear possible that either aspect can be neglected, in any case, without mischief. The second class is the only one with which it is possible to dispense. And the great problem before the sanitary engineer is, whether he saves or loses money by the introduction of a precipitating process in a series of operations which it is idle to attempt very materially to simplify. As to this, Messrs. Robinson & Mellis's book gives available information with regard to the different procedures employed. Mechanical straining becomes necessary when the sewage contains much foreign matter, such as paper, rags, corks, hops from breweries, and the like. The authors recommend Latham's self-cleansing mechanical strainer, as a simple appliance for this purpose.

Chemical treatment is intended to deodorise, disinfect, and precipitate the organic substances contained in the sewage. The conditions necessary are; to employ chemical substances which effect the three objects (and not the latter alone); which are attainable at a moderate price; and which add as little as may be to the bulk of the precipitate. The processes on which experiments on a large scale have been made are grouped by our authors under four heads. These are,—(1) processes which employ salts of alumina as the chief precipitating agent; (2) processes which employ lime as the chief precipitating agent; (3) processes in which salts of iron are used as precipitants; and (4) miscellaneous processes.

Under the first head, the first instance given is at Coventry. The population of the place is about 40,000. Its sewage has for many years been poured into the river Sherburn, at a spot situated a mile to the south of the city. In this locality the river is not more than 10 ft. wide, and very shallow, so that the flow of sewage, amounting to two million gallons in the twenty-four hours, often doubled or trebled the volume of the river itself. The sewage was extremely foul, coloured by the refuse of dye-works and the like; and the result was, that the Sherburn really was turned into an open sewer of a very offensive character. This water, in conjunction with that of another small river called the Sowe, entered the River Avon, and contributed to supply the drinking-water for the town of Warwick. In consequence, the authorities of Coventry have been exposed to much trouble, and have made various unsuccessful attempts to get rid of the nuisance. For these we refer the reader to Messrs. Robinson and Mellins. Since April, 1874, the work has been in the hands of the General Sewage Company, whose course of procedure has been as follows:—

The sewage flows to the works by gravitation. It is first mechanically strained through Latham's extractors, which have collected, among material naturally to be expected, live fish and frogs, walking-sticks, silver-mounted meerschaum-pipes, and even spoons and forks. After straining, the sewage receives a charge of milk of lime, and then flows to four precipitating-tanks, worked on the continuous principle. These, when full, allow the effluent water to flow over weirs at their ends in a fair state of purity. From the tanks the effluent water runs to filter-beds, covering nine acres of land. These beds are used intermittently, so that when one requires rest or repair, another is ready to replace it. The effluent water finally passes into the River Sherburn. Analysis shows but little organic (albuminoid) ammonia, and not much more than half a grain of saline ammonia, per gallon. The nitrogenous organic constituents of raw sewage appear, according to a report by Dr. Voelcker, soon to become oxidised, and changed into nitrates to a considerable extent. A gallon contains 26 grains of sulphate and carbonate of lime, and 7½ grains of chloride of sodium, besides other salts and acids, amounting in all to 44 grains per gallon.

The chemicals used per diem are one ton of crude sulphate of alumina, which is manufactured on the works, and 5 cwt. of lime, to every million gallons of sewage, the cost of these ingredients being 34*s.* The total cost of rent of land, purchase of materials, management, labour, and interest on cost of works, is at the rate of 3,446·7*l.* per annum, being equivalent to 4·7*l.* per million gallons, or to 1*s.* 8½*d.* per unit of population.

The tanks are periodically stopped, and the precipitate removed for drying. The amount collected is about 25 tons per diem, of which 85 per cent. is water. This precipitate is passed through a drum filter, which reduces the moisture to 65 per cent. It is then passed through Milburn's drying-machines, and exposed to a low heating process, by which the moisture is reduced to 60 per cent. It is then stacked, in its heated state, and continues to lose moisture till it has dried down to from 10 to 15 per cent. In this condition the dry precipitate amounts to 4½ tons, of which, as we have seen before, 1½ ton represents the weight of chemicals added. The cost of drying is said to amount to from 6*s.* to 7*s.* per ton. The material has been sold as manure, at rates varying from 4*s.* a ton for precipitate containing 65 per cent. of water, to 40*s.* a ton for the dried manure, containing 10 per cent. of moisture. Some has been "fortified" by the admixture of phosphate of lime and other fertilising agents, and has been sold at from 5*l.* to 6*l.* per ton; the price being stated to represent more than the additional cost added to that of the manure by the fortifying materials. The authors state that if the estimated value of the manure be realised, the annual cost of 3,446*l.* would be diminished by sales amounting to 832*l.*, reducing the cost to 1*s.* 3½*d.* per unit of population. There is, however, no account of the actual debtor and creditor operations. It is clear that it is to such accounts, extending over a series of years, that the engineer has to look for guidance. When, on one hand, there is a positive expenditure, and, on the other hand, an estimate of value, possibly to be realised, we are far from being on solid ground. As the General Sewage Company have been at work since the 30th of April, 1874, we do not understand why only the amounts of the expenditure for August, September, and October, 1876, should have been taken from the books; and why the actual cost, and actual receipts, from April, 1874, to, say April, 1877, have not been given by Messrs. Robinson & Mellish. The matter is one of too much practical importance for any one to give much for estimates when actual accounts should be forthcoming.

Nuneaton, with a population of 7,399, has adopted the same process that is used at Coventry. The effluent water is filtered through two acres of land, and the cost of the works, exclusive of any receipts from sales, is reckoned at 1*s.* 8*d.* per unit of the population. The accord between this financial result and that attained at Coventry is a satisfactory feature in the case.

The native guano, or A, B, C process, patented in 1868 by Messrs. Sillar & Wigner, consists mainly in the addition to the sewage of alum, blood, and clay. In 1868 it was introduced at Leicester. No account of the financial result is given; but the testimony on the Rivers Pollution Commission report is to the effect that the process failed to purify the sewage so as to render it admissible into running water. In 1869 the process was in operation in Leamington, where it was also given up. The cost of the ingredients employed here is said to have amounted to 15*l.* 18*s.* per million gallons of sewage. Another trial of the process was made at Crossness in 1872. The heavy cost there incurred is said to be due to exceptional circumstances. It is not, however, encouraging, even with this qualification, being equivalent to 76*l.* 6*s.* per million gallons of sewage. In 142 tons of dry manure yielded by the process, only about 61 tons consisted of ingredients found in the sewage, while 81 tons had been added by the experimenters. Thus the manure, to the sale of which the patentees looked for a profit, was worth, if chemically regarded (which is a very different thing from a sale price), barely 20*s.* per ton, while it cost 6*l.* 6*s.* 4*d.* per ton to produce it. Experiments on the same process have also failed at Tottenham and at Hastings; at Bolton, Southampton, and Leeds. The process is now being worked at Aylesbury, where upwards of 7 tons of foreign ingredients are added to every million gallons of sewage. The results have not been published.

The phosphate sewage process, patented in 1870, consists in the use of the expensive ingredient phosphate of alumina, together with lime. Experiments were made on this process

three years ago at Barking; but the results have not been published, and the trials have been abandoned. At Hertford the corporation have made an arrangement, highly favourable for the town, with the Phosphate Sewage Company. The balance-sheet of the latter has not yet been published; but chemists are of opinion that the value of the phosphates is deteriorated by the process through which they pass, so that more money is put into the sewage, in the form of this expensive chemical, than comes out of it in that of manure.

Bird's process employs what is called sulphated clay, which is a mixture of from four to nine parts by weight of sulphur with one of common clay. It was tried without success at Cheltenham. It is still in use at Stroud. One ton and three quarters of solid materials are added by this process to a million gallons of sewage. The sewage at Stroud is weak, but the effluent fluid is not such as to be admissible into a clean river. Financial details are not given.

Last of this group of processes is Stothert's, patented in 1852, which employs lime, sulphate of alumina, sulphate of zinc, and charcoal. It does not appear that the process has been in practical application anywhere, and as the ingredients to be added to a million gallons of sewage appear to amount to more than ten tons in weight, it is not improbable that this may continue to be the case.

No less than nine processes have been patented which employ lime as the chief precipitating agent. These are called by the names of the inventors; Hille, Marsden & Collins, Holden, Fulda, Blythe, Whittbread, Campbell, Hanson, and Goodall. Details of the trials of each are given in the volume. The general upshot is, that the lime process, one of the earliest attempted, has been under trial for thirty years; that it does not purify, but only clarifies, sewage; and that it produces a nearly valueless manure. Results like this it is of the first importance to the sanitary engineer to learn, to verify, and then to act upon by abandoning any further application of time and money to a method radically inefficient.

Salts of iron have been used as disinfectants for more than a century. At Northampton chloride of iron, in conjunction with lime, was tried for the sewage of a population of 40,000, six gallons of chloride, and twelve bushels of lime, being added to each million gallons of sewage. The effluent water was then filtered through 8 in. of calcined iron ore. In 1870 an injunction was granted against the Corporation, and the system was abandoned. Trials at Clifton and at Cheltenham also failed.

There are many other patent processes for the precipitation of sewage, none of which have been put to any practical use. The methods of Higgs, Dale, and Dimsdale; of Lenk; and of a mixture of hydrate of lime, chloride of lime, and alum, under experiment at New Shoreham, are mentioned among them.

We have thought it useful thus far to enter into the details of that portion of the book which is likely to be of most use to the engineer by way of preventing useless experiment. For the other heads of treatment we must refer to the volume itself. The "general conclusions" of the author's by a reversal of the ordinary method of arrangement, occupy the first chapter of the book. We call attention to the statement that "a careful investigation of the various systems for treating sewage leads to the conclusion that water-carried sewage has never yet yielded a profit, when all things are taken into consideration, and that it is a nuisance that must be got rid of at the expense of ratepayers." Another part of this chapter leads to a not less important conclusion, although it is one which is too much ignored in recent proposals for sanitary works. "The disposal of sewage by discharging it into the sea does not hold out the hope of a a solution of the difficulty in that direction that is claimed for it. At Brighton the cost would appear to amount to upwards of 5*l.* 10*s.* per million gallons of sewage. No possibility of any revenue exists, and the authorities now have to face the difficulties of sewer gas and ventilation of sewers, with the attendant risk of disease."

A serious defect in the book is the want of any account of what has been attempted, and what has been effected, by General Scott. The name of this officer only once occurs in the Index, and the place in the work to which we are referred says nothing as to the manufacture of cement by the process patented (we believe) by him. Yet, if the other conclusions above quoted are to be relied on, it is to the combustion of the precipitated matter, in combination with the filtration through the ground of the effluent water, that experience points. It would be highly important to know all that is known of the experience that has been obtained as to the use of the precipitate as a self-consuming fuel, and as to the composition and utilisable character of the resultant ash. Messrs. Robinson and Mellise have thus given rather a comprehensive sketch than an exhaustive report; but their work is the most complete which we have as yet had to notice. It is a step in the right direction. It will probably be some years before enough experience is collected to allow of the writing of a systematic standard book on the subject. Meantime the need of the sanitary engineer is wide-spread, detailed and exact information, as to what is the actual outcome of the large expenditure already directed to this portion of our sanitary work.

THE BIRTHPLACE OF PETER PAUL RUBENS.

UNTIL a few years ago, Cologne was considered the birthplace of Rubens, a house in the Sterngasse being pointed out as the spot where the painter saw the light. It was even intended to perpetuate this hypothetical assertion by a commemorative tablet. It was then that M. Backhuisen van den Brink brought forward proof from the archives of the house of Orange, according to which the family of Rubens, at the time of the birth of Peter Paul, was living at Siegen, which place had been assigned to the father as a forced place of residence. Cologne thus seemed to have lost its claim, and raised no objection when recently the little town of Siegen celebrated officially the tercentenary of the birthday of its supposed great native. But Antwerp protested; Antwerp is not inclined to give up its claims to be the birthplace of Rubens. The manuscripts brought forward by M. Backhuisen were somewhat inconvenient for those claims, but it was alleged that the mother of the painter, shortly before his birth, went to Antwerp, and was delivered of a son there. The *Cologne Gazette*, in alluding to the above, says that, though there are no positive proofs, yet the possibility of Rubens having been born at Antwerp cannot be denied. According to our contemporary, it matters little where the great painter was born, since, as appears from a letter of his, he remained at Cologne only until the tenth year. At that age he returned with his family to the Netherlands, and consequently received there the education which makes the man. The most recent information on the subject of Rubens's birthplace has lately been brought to light by M. van den Branden, assistant librarian of the city of Antwerp. This gentleman has come across a notarial document, in which Rubens, with Breugel and van Balen, all painters, appear as witnesses, and are all described as burghers of Antwerp. The otherwise not uninteresting document is as follows in the original Flemish:—

"28 Augusti 1618.

Signors Jan Breugels, oudt omtrent achtenveertich jaren, Henrick van Balen, out dryenveertich jaren ende Peetro Paulo Rubbens, oudt eenenveertich jaren, ALLE schilders, POORTERS ende ingesetenen DESER STADT, my notario wel bekent, ende hebben, ten versuecke van Signor Laureys de Smit, by manne waerheydt, eedt presenterende des versocht synde, geattesteert hoe dat sy, onlancx geleden, alhier binnen deser stadt, gesien hebben, in den winckel van den voorschreven Laureys de Smit, eenige stucken tapisseryen, gevrocht met gout, silver, syde ende saeyet van de Historie van Chipion ende Hanibal, ende dat het patroon, daernaer die gemaect syn, is de teeckeninge van Julio Romano, fameus Italiaens schilder, discipel was van Raphael Durbino, metten welcken hy in compaignie werckende was ende oyck desselffs Durbino erffgenaem geinstitueert, ende oversulex, een van de fraeyste patroonen die sy attestanten alhier binnen deser stadt gesien hebben. Affirmerende tgene voorschreven geseegt te hebben voor de gerechte waerheyt. Consenterende etc. Aldus gedaan t'Hantwerpen, ter presentien van Michel de Cock ende Christinen Peetermans als getuygen etc.

JEAN BRUEGHEL.
HENDRICK VAN BALEN.
PIETRO PAOLO RUBENS."

[TRANSLATION.]

"August 28, 1618.

Messrs. John Breugel, aged about forty-eight, Henry van Balen, forty-three, and Peter Paul Rubens, aged forty-one, ALL painters, BURGHERS, and inhabitants OF THIS CITY, well known to my notary, have, at the request of Mr. Laureys de Smit, testified on oath how that they, lately in this city, have seen, in the shop of the above-named Laureys de Smit, a few pieces of tapestry, worked with gold, silver, silk, and worsted, representing the history of Scipio and Hannibal, and that the pattern after which it has been made is the design of Julio Romano, the famous Italian painter, disciple of Raphael of Urbino, with whom he worked, and also appointed the same Urbino's heir, and, therefore, one of the handsomest patterns which the undersigned have seen in this city. They affirm the aforesaid to be in accordance with the strictest truth. They consent, &c. Done thus at Antwerp, in the presence of Michael de Cock and Christian Peetermans as witnesses, &c.

JOHN BREUGEL.
HENRY VAN BEULEN.
PETER PAUL RUBENS."

The importance of this document (the writer in the above-named journal thinks), with respect to the question under discussion, consists in the fact that the rights of a citizen or burgher (*poorter*) of Antwerp, according to the old laws (*costuymen*), can only be acquired by birth in the place itself, independent of the quality of the parents, or by solemn admission, by being sworn in before a magistrate and the town council, and being entered in the burgher-rolls (*poorters.booken*). Now it is another fact that in these well-preserved books Peter Paul has not been thus entered, while there is such an entrance for his elder brother—"Philips Rubbens, Janssone, geboren van Ceulen"—in the year 1609. M. van den Brandon concludes from this evidence that Peter Paul never bought or otherwise acquired the right of citizenship, and that he, since it is notorious that he was a burgher of Antwerp, possessed the right of citizenship by virtue of his being born there. The *Cologne Gazette* generously adds:—"Although this proof is negative, and not very binding, we do not find fault with the Antwerpers if they rest their proud claim upon this evidence. Rubens is the head and the representative of the Flemish school in its most singular singularity, and no one will contest with the Flemish the fame of claiming the great master as one of their own. It matters very little whether the house under the roof of which Maria Pypelinckx gave him to the world stood at Siegen or at Antwerp."

ST. PAUL'S SCHOOL.

THE Mercers' Company have purchased sixteen acres of land in Hammersmith, at a cost of something over 40,000*l.*, and on this site buildings will be erected for the celebrated school now located in St. Paul's Churchyard, behind the east end of the Cathedral. Mr. Barnes Williams is the Company's architect, and will, we suppose, build the new school. The existing school was built from the designs of the late Mr. George Smith, about the year 1823. Some of our readers will remember, some will not, that this school was founded by Dean Colet in the year 1512, and that he made the Mercers' Company, of which his father was a distinguished member, the governors of it.

THE WELLINGTON CHAPEL, BIRDCAGE WALK.

A CORRESPONDENT is startled by what he calls the "wreckage" of the interior of the Doric chapel at the Wellington Barracks, but he need not be alarmed: it will all be put straight again. Mr. Street is the architect, acting under a committee of officers, and Messrs. Adamson & Sons are the builders engaged upon the work. The tender, as we understand, was at first 16,000*l.*; but by substituting stone for marble, deal for oak, and so on, it has been reduced to 9,000*l.* The style of the new interior will be much less archaic than that of the exterior, which will remain as at present.

Falling in of a Roadway.—Considerable excitement has been created in Tottenham-court-road, in consequence of the roadway and footpath in front of the Gladstone public-house, Cumberland-street, kept by Mr. W. Purkess, falling with a tremendous crash into the cellars, almost burying some unfortunate men in the *débris*. To all appearance, there is some danger of the house itself falling.

AN ABSTRUSE QUESTION FOR THE ABERDEEN CONGRESS.

HOW HAS THE SOCIAL ELEVATION OF WOMAN INFLUENCED THE DECLINE OF ARCHITECTURE?

SIR,—I was yesterday painfully reminded that you have received no communication from me since my letter of the 19th of May last, when naught but duty forced me to speak upon a subject of the highest importance to men and architects in England and America. This letter will take a wider range: it treats of a matter which affects the world. Judicious acceptance and immediate publication of it will undoubtedly restore your readers to a proper sense of their obligations; for I regret to say that several recent numbers of the *Builder* which I sent to my sister-in-law and Fitz-Boodle have remained uncut. Indeed, it was only after a wickedly sarcastic remark of my own that little Lorimer took up one, and finding nothing of mine in it—she is the governess at Fitz-Boodle Hall, and when excited uses the *bourgeois* slang, though by no means a bad match for a moneyed man without brains—she said that it was really quite too awfully dull. I know, and my reasons are logically based, that she was prejudiced in her assertion, and so you need not take notice of it. My journey to the Hall was an important one. I shall never forget certain circumstances with which the visit was accompanied. We formed a *partie carrée*, half of science, half of fashion: My Lady Fitz-Boodle, Miss Lorimer, myself, and Miss E. Lizardo. The last-named, the great entomologist, is, as you are doubtless aware, the authoress of "The Condition of Ants in the Middle Ages," of "The Colorado Beetle: its Functions in the Press," of "The Insect at Home," and other equally well-known works. Our meeting was brought about in this wise. Miss Lizardo, having heard a report that the new beetle had committed deplorable ravages at Fitz-Boodle Hall, wrote to my brother for the facts of the case, and hinted that no exact opinion could be pronounced upon the actual condition of poor Fitz-Boodle's fields without personal inspection. Of course, under such circumstances, there was nothing to be done but to take Miss Lizardo to Norfolk; and as my brother, who expects another Pigott debate in the Lords, would not miss recording his vote,—the only return he feels he can make to the country for keeping him to legislate for it,—the three women were confided to me, and we left town on Friday. Obviously the conversation, almost purely insectorial, was sustained by the entomologist and myself. The technical discussion, however, was accompanied at intervals, and indeed, I may say, has been followed, by an inquiry into a question totally distinct from the Colorado Beetle; and yet one which at this season of the year most editors like to keep in reserve for the approaching festival of drought, when St. Swithin shall have retired and gooseberries and currants are no more. It is a question, too, involving a problem of such importance that a folio or quarto of a hundred pages might be usefully devoted to its solution; or a new weekly periodical might be started with the sole object of offering resistance to an increasing evil. For my own part in broaching it publicly I feel that I owe people an apology. Personally, perhaps, Woman and Mr. Cavendish-Bentinck would be justified in complaining that the life-long specialities they have made their own, are treated in a voluminous publication like this within the compass of a page.

Sir, have you observed that the degradation of the arts is co-eval in all ages with the increase of female influence? Never before has the mistaken ambition of the inferior sex been so forcibly pointed out to me as by Miss Lizardo. I am not a vain fribble; I adore the sex and have been frequently adored,—I am not absolutely an artistic or a scientific man, but my labours have never enriched any frivolous literary organs. There was no political necessity for me, a younger son, to provide a peer to keep the constitution intact. Perpetually single I have continued perpetually in love; and Miss Lizardo glanced gracefully at the circumstance. She complimented me on the unbiased views I took of men and women. "Mr. Fitz-Boodle," she said, "Intellect is the destroyer of art: women have destroyed art from the earliest periods to the present day." It would be impossible for me to give the conversation word for word: permit me simply to put together the gist of Miss Lizardo's discourse and the points of her argument. Admirably well informed, she expresses her thoughts with a marked facility of utterance: she edges in Pericles, Praxiteles, and Plato as if they were mere relations of a Brown or a Jones. The weakness of a *parvenu* in the first or of a dolt in the fourteenth century, if at all historically famous, are calmly exposed by the great entomologist, who defies Mr. Walter, M.P., with all his art-learning, to make the modern English even as artistic as the Romans. She defies Mr. Forsyth, Q.C., M.P., with all his love for the sex, to improve the franchise, or reform the House of Commons, except by the total subjection of Woman to the will and pleasure of her traditional lord and master, Man.

Take, she says, the age of Pericles, for it is premature to talk of Helen or of Troy until the archæologists have settled the exact date of the birth of the one and of the destruction of the other; take the century of artistic supremacy from the year 450 B.C. to the year 350 B.C., and inquire into the then state of the lower orders of human kind. The respectable portion of the women were little better than slaves; and as Miss Lizardo hinted, with the female writer's proverbial delicacy, of her own sex the Grecian slaves alone possessed their liberty. Then arose the school of Plato, in which love was glorified, and the miserable passions of human nature were so described as not only to magnify a woman's opinion of herself, but even to induce the men to keep instead of exposing their female children, and perhaps to educate them. From that moment the arts began to languish; the power of artistic production, and the means of adornment in architecture were gradually lost. Even when Pausanias wrote of Greece, the works of the few preceding centuries were regarded as inimitable, or impossible to be surpassed.

Take the epoch of Cæsar and Cicero,—the first of Roman soldiers and the first of Roman philosophers. The wealth, physical and intellectual, of the world as it then was, lay at their feet; but neither they nor their countrymen, for even a hundred years after the murder beneath Pompey's statue, attained to the excellence of the Greeks who built the Parthenon. Why? Simply because they admitted women to a familiarity which might well have shocked the decorum and studied dignity of the Athenian in presence of his wife and her women. That is Miss Lizardo's opinion; and she holds that further degradation resulted in the course of the first century. Women were then admitted to participate in the pleasures of the table; and instead of weaving garments for their brothers, sons, and husbands, as the wife of Augustus did, they aspired to paint the frescoed walls of private houses. Pliny tells of one Iaia of Cyzicus, who always remained single, and who was a portrait-painter. The historian says he saw a large picture by her of an old woman, and also one of herself, taken with the aid of a mirror. There was also one Olympias who painted, and who took pupils,—Autobulus being one of her pupils. All this time the Roman buildings were getting bigger, yet, æsthetically regarded, they were inferior to the earlier architectural efforts not only of the Greeks, but of the Romans themselves. Even years before, Sallust recorded how virtue had lost her influence, poverty was thought a disgrace, and a life of innocence was regarded as a life of ill-nature.

A different policy was pursued in the Middle Ages: the woman was not only an in[illegible] the teaching of the Church pointed [illegible] that inferiority. No priest consorted with her; she was not permitted to enter a church, except her head and features were decently covered with a veil. In the twelfth century, Guibert de Nogent denounced with extraordinary force the allurements of Woman's nature, and the development of the original sin of coquetry. The determined manner with which for several centuries the Church enforced the humble and absolutely inferior condition of the sex was accompanied by uninterrupted excellence in art. Mediæval devotion never forgot or overlooked the early and beatified state of primitive Man. Chaucer, in "The Parson's Tale," says very nobly,—"For trust well, though so it were that the fiend tempted Eve, that is to say, the flesh, and the flesh had delight in the beauty of the fruit defended, yet, certes, till that reason, that is to say, Adam consented to the eating of the fruit, yet stood he in the state of innocence." From the end of the twelfth to the end of the fifteenth century, architecture, which then comprised all the constructive arts, flourished in a state of completeness and innocence unknown since the time of Alexander; it was never experienced after the successive elevation of two women to the English throne, and the enfranchisement of the sex. Then followed the licence of manners in the comedies of Charles II.; the worst sentences and parts were allotted to the female characters. The triumph at home and abroad of Queen Anne was attended with artistic demoralisation to so great a degree as to give birth to the reproach now levelled against an ugly building,—that of "Queen Anne" architecture. If France did not sink to an equal abyss of abasement, and if there, since the time when Henry VIII. visited Francis on the Field of Gold, every age possesses a few buildings fit to figure as the monument of it, the *loi Salique*, which is still in force, may be considered one though obviously not the principal cause.

The state of England in the Elizabethan age is described by Miss Lizardo as monstrous and intolerable. She has good authority for asserting that in the early part of the Middle Ages women were betrothed while still children, and, arrived at the marriageable condition, they were handed over to their stipulated lords after the proper ceremonies of the Church. But in the sixteenth century this wholesome practice exploded. A writer of the time describes the "canker of pride" which had eaten into the Commonwealth; how "every poore yeoman his daughter, every husbandman his daughter, and every cottager his daughter will not spare to flaunt it out in gownes, petticots, and kirtles!" Nor did the author of "Ye nutbrowne Maide" fail to perceive the reckless levity of the sex,—at the same time possibly misunderstanding the effect it was producing upon the arts of the country,—when he wrote that popular ballad, of which the burden is:—

> "I say not nay, but that all day
> It is both writ and sayde,
> That woman's faith, is as who saith,
> All utterly decayed."

And again, is it at all likely that Shakspeare, who sang so many pretty things about women, would have permitted Iago to indulge in his sarcasm about "fools and small beer," had not the tide of female revolution mounted higher than the poet considered expedient? But one of the strongest arguments, in an architectural point of view, to support Miss Lizardo's hypothesis, is to be found at this very moment when the social elevation of woman is higher than it ever was, and when, as Mr. Cavendish Bentinck, not many months ago, was good enough to explain, the decline and fall of British Architecture is an accomplished fact. Critics, bookmakers, lecturers, and women generally, point to the state of our actual buildings, and shrug their shoulders; restorers and anti-restorers, town surveyors, and æsthetic upholsterers, all the youngest students in the profession of architecture, gloat over the deplorable condition of the arts. Miss Lizardo's answer is unstudied and categorical; she points to the general ousting of men from all employments except haberdashery and the higher grades of domestic service, and thus pronounces her *pourquoi*. But, says she, if the arts are lost to Britain, they are still safe in the great dependency. In the empire of India the old traditions are preserved. Men there are still building with the genius and according to the example of their fathers; for, she adds with great emphasis, all their mothers are locked up, after the fashion of the Greeks.

I confess, sir, I am somewhat startled with this astonishing avowal on the part of a female entomologist of great reputation. Hireling pens may possibly take the matter up, and offer suggestions to obviate the inconveniences which a too great liberty accorded to the weaker sex has produced. I myself am contented to state a fact: the question whether a revival of the Grecian practice of dividing a house into an "andronitis" and a "gynæconitis" could be achieved by the formation of a Limited Liability Company—with my brother Fitz-Boodle's name to head the list of directors, and that of Miss Lizardo as trustee or arbitrator—I leave to you. Perhaps for the moment publicity will suffice. It would be desirable in any discussion upon this subject to secure the attendance of a large number of learned women; and the approaching meeting at Aberdeen of the National Association for the Promotion of Social Science will doubtless afford an opportunity, since the audiences of its Art-sections are principally composed of those whom a gradual rise to social power has unexpectedly placed under a ban of inquiry.

Let it not, however, be supposed by the admirers of my literary productions that I take a revolutionary view of the female position. Since it is such as it is, I say let fate do its worst. That it was not contemplated when,—source of all our joy and woes,—Angelic woman

into being rose, few will venture to dispute. I, at least, will admit with my Lord Lytton's father the probabilities of a coming race when the lion shall lie down at the bidding of the lamb; when the arts which require "rather the finger than the arm," and but a sparse quantity of brain, will be the appanage of majestic females; when the domestic virtues will be the whole duty of man; when the sciences will be a study for boys; and when another Lisardo will become the natural protector of another

BOODLE FITZ-BOODLE.

NEWCASTLE-UPON-TYNE AND ITS TRADE.

NEWCASTLE-UPON-TYNE is the northern metropolis of coal. The county of which it is the chief town does not produce the largest quantity of fuel,—indeed, it does not rank very high amongst the coal-producing counties,—but to the Tyne a large amount of Durham, as well as Northumbrian coal is taken for shipment, and so far as coal shipments are concerned, that dark river may be described as the first of our coal-shipping rivers. Of the town itself, nothing is known prior to the Roman era; but when, more than sixteen centuries ago, the great wall was built from the Tyne to the Solway, Pons Ælii was the second of the strong fortified camps or stations along the route. When, however, the protective Romans departed, there came down on the North Country tribes from the farther north,—"like the wolf on the fold,"—who swept out the place from remembrance for a time; but the deserted place was re-settled, and under the Normans, Newcastle arose in name, and in the embryo of the town we know, and though in the troublous years that followed the inhabitants had to suffer, yet they acquired special privileges from successive monarchs, amongst which privileges was one granted by Henry III., giving to the good men of Newcastle "licence to dig coals and stones in the common soil" of the town. From that time it might be said that the fortune of the young community was made. Its castle was completed; there were additions to the conventual establishments, growth characterised the town, and its trade became settled. But not until towards the close of last century was there any promise of either the great trades or the town attaining their present dimensions; for although in 1791 the coal shipments amounted to nearly half a million chaldrons, other trades were on a scale even comparatively smaller, and the population of the town was small, indeed, to what it now is; indeed, in 1821, it was only 43,507, and it was in the decade following that growth set in, the population rising to 55,922 by 1831, but this rate of growth, even, is small to that between 1851 and 1861, when nearly thirty thousand people were added, and the total was brought up to 109,108 for the last-named year, or to that of the decade preceding the last census, when the population was raised to 128,443. And the effects of the growth of Newcastle, and of the centring of trade on the Tyne, have been perhaps as much marked in the district outside that borough as in it.

Up to the end of the last century Newcastle preserved traces of its antiquity in its streets and buildings, far beyond what the visitor to it now would deem possible. The town was divided "into two sections by an inconsiderable brook," the houses were closely packed together, the streets were narrow, but even in some of what are now the worst, dwelt the chief of the towns-people. Newcastle has shared the fate of London, in that much of its oldest parts and mementoes were swept away by a fire, after the population had felt the scourge of a plague. From that time the improvement of the town and of its architecture,—commenced at the beginning of the present century,—received an additional impetus; and now, in the character of its approaches, of its public buildings, and of its business streets, Newcastle may vie with any town of its size and situation. Under Grainger, the great business arteries of the town, and its chief ornaments in street architecture, were carried out, at a cost of nearly half a million sterling. The high-level bridge became a monument of Stephenson, and a most commodious station became a fitting terminus to the great railway road into the town. And in its public buildings, in its churches and chapels, its noble institutes and halls, and in the more extensive of its banks and mercantile establishments, there is full proof that modern Newcastle has right to take high rank amongst the towns of the kingdom, whilst, probably, in none has there been a greater change in some two score years than has been seen in the Tyneside metropolis of coal. But probably the greatest change in the condition and aspect of Newcastle this century is due to the extension of its chief industries, and the development of others. Not only has there been a growth of the coal trade which is unparalleled, but the engineering trade has also become one of vast proportions, the chemical manufacture is of vast extent; and iron shipbuilding, glass manufacture, and other industries have attained to large importance.

Taking, first, the great industry of coal shipment, it may be said that whilst in the first year of this century the total amount shipped was 1,331,870 tons, it increased in the first decade of the century by nearly half a million tons; in the next there was a further increase, and in the following an annual shipment of two million tons was considerably more than passed. By 1841 three million tons were shipped,—more than two-thirds being sent coast-wise. Since that period a further increase has taken place, but chiefly in the foreign shipments, which have grown to exceed those to other home ports. Ten years ago the exports were rather more than four million tons annually; by 1870, they had passed five million tons yearly; in 1873, they were close upon five and a half millions, and now the vast quantity of six million tons annually has been more than reached. And in its other exports the Tyne has known a vast if not an equal growth. It has very large chemical works, old and extensive engine factories, and other industries, which contribute largely to that growth of the exports of the river. A dozen years ago, the value of the exports from the port of Newcastle (other than fuel) amounted to about 770,000*l.* yearly; but by 1870, it rose to 2,100,000*l.*; by 1873, to 3,100,000*l.*; and although the decreased value of goods, such as iron, has caused a fall to be marked in the value, yet the total yearly exported is still vast; and it may be still said, we believe, that no other river in Britain, excepting the Mersey, has so large an export trade. The imports into the Tyne ports are large, though not equally so,—the grain, ore, and sulphur having been largely increased of late years. Annually about 17,000 vessels "clear" from the river, the outward tonnage being over six-and-a-half millions; the ships built on the Tyne range from 80 to 120 yearly, and the engines built,—locomotive and marine,—are many and powerful. The river, under the Tyne Conservancy, has been changed, works of dredging and other improvements having been undertaken on a very large scale, and the value of the river for purposes of refuge and commerce has been almost indefinitely increased in consequence.

Deriving their subsistence in the chief degree from these industries, in its district or union, one of limited area beyond the town, is a population of 130,800. It may further give some idea of the extent of that district if it be added that there are in its limits 2,729 paupers. In the borough, in the last police year, 10,894 persons were proceeded against for offences. In some degree contributory to this criminality, it may be said that there were 450 public-houses, and 355 beerhouses. Included in the offences was that of drunkenness, for which the large number of 4,768 were proceeded against, the number of policemen being 200. But unquestionably this criminal return was swelled by the mining population, which, at stated seasons, flocks into Newcastle as its mart, its great pleasure-ground, and its centre of attraction, and in which the droughty portion gratifies its love of drink.

Dependent so largely on the coal trade, Newcastle must be greatly affected by the question of the duration of its great fields of fuel. It is the opinion of some of those whose words are entitled to weight that the best seams of one of the chief classes of coal are being speedily exhausted, but their opinion is not one universally held. It is, however, tolerably clear that at the present time the position of the coal-owners of the great Northumbrian coal-field is far from being as unchallenged as it once was, for the competition with South Wales is increased. And it may also be said that the output of coal in the Northumbrian coal-field is scarcely likely to be largely increased, for the number of workmen is probably less than it was, and the cost of coal as well as the output per man has been adversely affected by the operation of the Mines Regulation Act. Whether or not the Northumbrian coal trade has attained its meridian, it is scarcely probable that the great centre, Newcastle, will not continue to increase. It is no longer based exclusively on the coal trade; it has become an engineering centre; the chemical trade is one of its chief supports, and various branches of the iron trades are in its vicinity. There is known at the present time in several of these industries a deep depression, which has been unusually prolonged, but this may be taken to be one of the ebbs in the trade wave which are the usual followers of a long period of prosperity, and which should now be speedily recovered from. The proposal to extend the accommodation of the Tyne shows that its foremost men take this view, and that they have a full belief in the future of that river, and of the town which is its trading centre. So long as its coal lasts, the foundations of its trade are secure; and even the exhaustion of its supplies of fuel by no means ensures the sapping of these, for new industries are growing, new resources are being developed, and the future of Newcastle is therefore one of promise.

WANDERINGS AND QUESTIONINGS IN ARCHITECTURE AND ART.

ENGINEERING A BRANCH OF ARCHITECTURE.

ARCHITECTURE, in some respects like her sister arts Painting and Sculpture, but altogether unlike Poetry and Music, has its ethereal spirit fettered to a material body. In its purely monumental walk it is in exactly the same case as painting and sculpture. But in all its other departments the art-spirit is manifested through a material body devoted to a practical purpose for the supply of physical wants only. It is soul and body; and as the soul of man is a principle that animates the whole of the body, so in architecture you cannot say this part is mere building, and this art, for the art-spirit thrills, as it were, every part of the building at once, reminding us of the pantheistic theory of the universe expressed by Orpheus, "The world,—all we see and feel, is the body of Zeus or God." Such is architecture, which, I am about to maintain, is a broader and more comprehensive thing than is usually supposed.

Most people, though looking on architecture and engineering as closely related to each other, consider them as separate pursuits, between which a distinct line can be drawn. But no such line appears in a correct view of them;—the latter melts into the finer art, and is embraced along with it in any true theory of structural art. Architecture, by which I mean all building art and science in the largest acceptation of the word, consists of three great branches,—viz., civil, military, and naval,—the first, civil architecture, being again divided into civil architecture proper and civil engineering, which latter, though not usually reckoned as a branch of architecture, is, I conceive, not only a branch of the science of architecture or building, but of the art also; for I have yet to learn why a bridge, an aqueduct, a water-tower, a mill, or any other engineering object placed constantly before our eyes should not be framed by the laws of art, and made as beautiful as a palace if it can be made so, and not by merely superadded features, but by composition and form, proportion, contour, chiaroscuro, &c.

In an engineering work, it is true, the demands generally of the practical purpose are more imperious and stringent than in an architectural work, and allow less sacrifice to be made to the graces. Engineering works are more the creations of constructive science, and less of art and beauty, than architectural works. But so far from great magnitude or strength and durability exempting any works from the duty of being agreeable to the eye, it deepens the obligation under which they lie to be so; it renders their claim to exemption the less. They ought to be made beautiful if they can be.

But there are so many objects,—lighthouses, war-towers, turrets, Roman aqueducts, bridges, tall chimneys,—which, though fitness only was considered in their formation, have, nevertheless, more or less of grandeur, or grace, or beauty,—as much, in some instances, as works in which beauty was the prime object, that this is beyond a question; and it is evident that all engineering works might be at least agreeable to the eye instead of disagreeable; that all are susceptible of more or less of architectural beauty, and of being designed in the true architectural spirit,—science and art working together hand in hand in their formation. I could point to tall chimneys

which, from their size, form and proportion, and graceful outline, are really imposing objects, and strike the imagination more than many spires and monumental columns. Those I refer to look like what they are,—chimneys. I mean they are not disguised as Italian bell-towers, through which, when issuing smoke, they present a somewhat alarming appearance. Even those most useful constructions the Britannia and Conway tubular bridges, honouring to the age as trophies of constructive science and skill, needed not to be so painful to the eye of taste as they are,—the latter more particularly, marring as it does the castle and city. I feel sure that no objects half so hideous disfigured the ancient world as those bridges. There was difficulty, I grant about these; and the fine-art spirit might well be excused if she slightly shuddered at the idea of entering these super-marine tunnels. But all masonic erections upon the earth are in a different case, and the most Cyclopean walls might be built, like those of Thebes, to the sound of the lyre, and made music of the eye. The fable of Amphion's so raising the walls of the capital of Bœotia has been supposed to mean that he persuaded by his eloquence a wild people to unite and build themselves a city; which may be true. But to me it conveys also the impression of the ancient poets of the connexion between colossal architectural achievements and those emotions of the soul which music can most readily and powerfully excite. I attach the same meaning to the incident of Apollo, the god of poetry, music, and eloquence, assisting Neptune to build the walls of Troy.

It does not appear to me that the Romans had any idea of a difference in the treatment between their architecture proper and those colossal works which were for purposes of public utility. Their aqueducts and bridges, both at Rome and in the provinces, equally with their palaces and temples and triumphal arches, attest the grandeur of design which characterised the architects of the early period of the Empire.

But engineers, whose productions, of all the works of man, come nearest to rival those of external nature in point of size, ought, in the treatment of their works, to be guided by the analogy of nature, who never, when free from accident or disease, produces anything ugly or without some quality to gratify the eye. The most useful things,—fruits, vegetables,—she makes as beautiful often as things that are for beauty only. A kitchen-garden or orchard is not much less pleasant to the sight than a flower-garden. If by accident anything very unsightly appears she hastens to adorn it; and never upheaves a rock, hill, or mountain, without straightway proceeding to clothe it with beauty. The ugliest fissures made by some convulsion of the crust of the earth are in time decked with trees and shrubs, grass and herbs, and become romantic glens, which the popular imagination peoples with fairies. Nature not only never erects anything unsightly when she has her own way, but she is always increasing the beauty of her works by garlands of leaves and flowers and minute vegetation, and sometimes exhibits a surface decoration sufficient to make us blush at some of ours. If these lessons of nature had had their due effect, there would not have been the outcry that has sometimes been made by lovers of picturesque scenery against the introduction of railways into beautiful and romantic parts of the country. The poet Wordsworth, for instance, would have had no objection to their introduction into the Lake District if the railways he had seen elsewhere had been as agreeable features of the earth as they might have been. The railway itself does not disfigure the country it passes through more than any other way or road, and all buildings in connexion with it, as well as the locomotive engine, with its globular boiler, its chimney and colossal plume of smoke and train of carriages, are susceptible of beauty. Nor need slate and stone quarrying or coal-mining operations at all mar the beauty of the country.

But what I here say of civil engineering applies to the other great divisions of architecture in a less imperative degree, viz., military and naval architecture, or shipbuilding, as I have already indicated by using the word architecture in the comprehensive sense in which those branches are included,—for castles, barracks, batteries, magazines, forts, ships; everything that is to be seen by mortal eye, is under the same obligation of being agreeable to or not offending that eye.

Architecture is the art of the beautiful in building,—building of any kind; and there is no structure into which the fine-art essence or spirit of beauty will not enter. She is capable of revealing herself, more or less, in every form which the physical wants of man dictate, and which ascends into the sphere of art in proportion as it has imbibed her essence. That this spirit of beauty can float over the sea in a ship we well know; for ships generally—sailing-vessels in particular—exhibit a fairy-like grace that charms everybody. And that she can throw a veil of enchantment over the threatening war-tower or lonely beacon is as evident; for such buildings often exhibit a grandeur of form that renders them rivals of the palace and the temple, and, along with other known objects before mentioned, show that everything erected by man on the face of the earth, or made to rise out of the sea, or to float on its bosom, may, like the works of Nature herself, have its own species or order of beauty.

To return to civil engineering. Though it is pretty evident that Vitruvius and others of the ancients, and certain that many moderns united in their persons the character of engineer and architect, yet it was wise, I think, to keep them generally separate. But I maintain that the engineer should join to his knowledge of mathematics, and the principles of mechanics, hydraulics, &c., a knowledge of architectural design, and combine in his works architectural beauty with fitness for the purpose for which they are designed; that while engineering or constructive science more or less goes into every work of civil architecture, architectural beauty should enter more or less into every work of civil engineering. The civil engineer should, in fact, be a votary of architecture, which enjoys the proud distinction of being the only one of all the arts that has been named great; that is, had the epithet "great" incorporated with its name.

Some skill in architectural design is necessary to the engineer to enable him so to treat large works that their dimensions will tell or be fully appreciated, and the utmost power attained,—an important point, both in architecture and engineering, especially in reference to large works, which are most easily invested with sublimity. In such works there should be in the design some feature that will serve as a scale by which the eye can measure it,—some feature proportioned to the human stature,—a door, statue, niche, or pilaster of common size. For want of this some great works have failed to strike upon the sense with a force proportioned to their magnitude. For want of this scale, and from being situated in a boundless plain, it is said the Great Pyramid, the sublimest of the works of man, disappoints the traveller by its diminutive look; while the Colosseum of Rome, from its being divided into four stories, and relieved by moderate-sized openings and columns, though not a third of the height of the Pyramid, is the most imposing building in the world. The great dimensions of the fine catenary arch spanning the Dee at Chester, is not appreciated for want of the scale which the voussoirs would have supplied had they been properly emphasized, instead of being disguised as one colossal moulded archivolt.

Great or grand objects are especially valuable in cities and towns for their tendency to expand the mind, and engineers should be rejoiced to find that it is within their power to make their works (even when architectural ornament is out of the question, as in dock walls, barracks, mills, factories), by fine form and breadth of composition, sublime.

I consider civil engineering as simply another walk of architecture,—as much related to all the other walks of architecture as they are to each other,—as much related for example to domestic architecture as that is to ecclesiastical architecture. The difference between architecture and engineering is that in the latter strength is more imperatively required than in the former, and beauty less; which does not hinder it from being considered what I humbly assert it, rightly considered is, *a branch of fine-art architecture.*

SAMUEL HUGGINS.

Blenheim.—Some of the sculpture work at Blenheim Palace is undergoing restoration. The colossal statue of the great Duke,—a work representing his Grace in the costume of Augustus,—has lost the figure of Victory which formerly stood in his hand, and other parts show signs of wear. The work has been entrusted to Mr. Roddis, of Birmingham, under the direction of Mr. F. B. Osborn.

CHURCH OF ST. MARY ALDERMARY, BOW LANE.

THE original Church of St. Mary Aldermary or Oldermary is supposed to be the oldest church in London called by the name of St. Mary, and therefore originally of very ancient foundation, prior even to St. Mary-le-Bow.

The building immediately before the present one was founded by Sir Henry Keeble, grocer, and Mayor in the year 1510, and was not completed when he died in 1516. A great portion of the church was destroyed in the Great Fire of London, and was afterwards reinstated by Sir Christopher Wren, and completed in 1682 at the expense of Henry Rogers, a great-grandson of Sir Henry Rogers, privy councillor to Queen Elizabeth. The general character of the building, as restored after the fire, followed that of the former structure.

At the union of the benefices of St. Antholin and St. John the Baptist upon Walbrook, with those of St. Mary Aldermary and St. Thomas Apostle, a short time since, it was determined to thoroughly renovate the church, and to render it more fitting for the purposes of divine worship. Funds having been obtained for the purpose partly from the sale of St. Antholin's Church and tower, and partly from the united parishes of St. Mary Aldermary and St. Thomas Apostle, the works were commenced in the early part of last year, and the church was re-opened for divine worship on the 17th inst., the Lord Mayor and sheriffs and a large body of the clergy being present on the occasion.

The works which have been executed at the church consist chiefly of the following:—

The removal of the cement which covered the external face of the walls, and reinstating the stone ashlaring; rebuilding the buttresses where the old foundations were found to exist; the re-opening of the windows in the north aisle, which had been blocked up after the Fire of London; a general repair and restoration of the external stonework, including the tower, and some new doorways and oak doors; the removal of the gallery and internal fittings; the fitting up of the church with new oak seats, and the chancel with stalls; a new oak glazed screen across the church at the west end; and the erection of a stone reredos, which was the gift of the senior churchwarden of St. Antholin's; also the repaving of the church with encaustic tiles, with marble steps to the chancel. The windows have been reglazed principally with painted glass, which has all been presented to the church by various donors. The monuments from the church of St. Antholin have been replaced in the tower. A new heating apparatus and hot-air flues have been provided; also new gasfittings of polished brass, consisting of coronæ suspended from the centres of the arches, the chancel being lighted by handsome brass standards springing out of the brass altar-rail.

The whole of the works have been carried out from the designs and under the superintendence of Mr. Charles Innes, architect. Mr. Charles Fish, of Pimlico, was the contractor for the general works; Mr. Alfred Robinson, of Holborn, executed the oak seats, stalls, screen, and other fittings; Messrs. Simpson & Son laid the tile paving; Mr. Seale executed the Caen stone reredos and other carving; and Messrs. Richardson, Ellson, & Co. provided the gasfittings and altar-rail; Messrs. Clayton & Bell are executing the painted windows, except those of the clearstory and tower, which have been provided by Messrs. Gibbs & Moore. Messrs. Blake & Co., of Coventry, provided the heating apparatus.

LIVERPOOL ARCHITECTURAL SOCIETY.

THE localities of the annual excursion included Whalley and Stonyhurst. Full as these places are of objects interesting alike to the architect and the archæologist, the trip did not attract so many as could have been desired. On the way a call was made at Mitton Church, the date of which is believed to be earlier than 1593. A beautifully-carved font cover bears that date and the name of Richard Molenex (so spelt), one of the Sefton family. There is in the chancel some interesting sculpture over the tombs of the extinct Sherburne family, who gave their land for the Roman Catholic College of Stonyhurst. At the conclusion of the visit to Stonyhurst, Mr. J. M. Hay (president) conveyed the thanks of the members to the rector for allowing them to inspect the college. The party returned to Whalley, and

at five o'clock dined together at the Swan Hotel. Mr. J. M. Hay (president of the Society) occupied the chair, and Mr. James Montgomery (treasurer) the vice-chair; amongst those present being Mr. Joseph Boult, F.R.I.B.A. (one of the members of the council), and Mr. F. W. Hornblower (hon. secretary).

PORCHESTER CASTLE.

ALTHOUGH England is rich in Roman remains, and full of material traces of the all-pervading energy of that race of conquerors and colonists, such are chiefly roads, encampments, foundations of domestic buildings, and less frequently of fortresses or military works in masonry. Of these latter the chief are Burgh, Caerleon, Caerwent, Caistor, Pevensey, Richborough, and Silchester; parts of Colchester, Lincoln, Wroxeter, and York, and a few traces at Chester and Leicester. But of these, not inconsiderable, remains, none are to be compared for completeness of preservation, and but few for extent of area, with Porchester.

That Porchester is a Roman work is unquestionable, though this certainty is not derived from its early history, of which little has been preserved, but from the evidence afforded by its plan, materials, and workmanship, confirmed in some measure by the relation of its walls to the additions of the Norman period; also, an undoubted Roman way connects Porchester with Venta Belgarum or Winchester.

This celebrated fortress is built upon a low point of land which projects into the inner or northern part of Portsmouth Harbour, dividing that spacious and secluded inlet into two heads, and expressing in its name both its position and its character. It is placed about three miles above the narrow entrance which, flanked by the towns of Portsmouth and Gosport, is the passage from the larger and exterior roadstead of Spithead.

In its present and tolerably perfect condition, Porchester is a walled enclosure, square or nearly so, containing within its area close upon nine acres. The investing walls measure, by the larger Ordnance survey, 210 yards north and south, and 207 yards east and west. They range from 15 ft. to 40 ft. high, and from 6 ft. to 10 ft. thick. They were supported outside by four mural bastions on each face, and one at each angle, in all twenty, of which six have at various times been removed, two from the east, one from the north and from the west, and two from the north-west and south-east angles. Those bastions which remain are half-round, 19 ft. to 20 ft. in diameter, and have slightly prolonged and flattened sides. The angle bastions are of the same pattern. That to the north-west was removed to make way for the keep; that to the south-east has fallen, undermined by the sea. The two remaining are open at the gorge, as are the two upon the east front. The rest are closed, and probably all were originally so, for the interior work is very rough indeed, and seems intended to have been concealed with earth and rubbish, as was often the fashion in Roman works. Probably some of those now open have been cleared out by the Norman architect, to make use of the interior; the gorge wall of one of those to the south has recently given way, and the interior is seen rough as the Roman builders left it. These bastions at present, with one exception, rise no higher than the curtain, no doubt their original condition, but it seems probable that the Normans raised a story upon them, and thus converted them into mural towers. They stand from 41 yards to 42 yards apart, from centre to centre, the distances being slightly unequal. On the west face, however, the two bastions flanking the gate are 48 yards asunder.

The walls are built mainly of flint nodules, laid in courses with as thick, or even thicker, beds of mortar. Occasionally are seen single and double flat courses of red tiles and of tile-stone, and sometimes of herring-bone work, characteristic peculiarities, especially strongly marked in the bastions. The work seems late in the Roman period. The walls have been patched with Caen stone, and by later builders with coursed flint, and more recently with brick. Here and there the parapet may be Norman, but this can scarcely be the case with much of it, which must have been frequently renewed. The two missing bastions to the east, to judge by the patching up, were probably gone when the Normans took possession. One on the west face was evidently standing in the Perpendicular period; that at the south-east angle fell but a few years ago. There is still an east and west, a water and a land gateway, nor do there appear to have been more in the Roman period.

The east face is washed by the sea, here a good defence, because too shallow for boats, and too deep for land operations. On this face the curtain is especially high, reaching 40 ft., and at the base of its parapet is a row of small holes, as though to carry a timber gallery or *brattashe*, no doubt a post-Norman addition. Between the south face and the sea there intervenes a triangular strip of flat land, from nothing to 60 yards broad. To command this, and protect the foot of the wall, a berm or platform of earth has been thrown up against the wall, about 6 ft. high and 24 ft. broad, in front of which is a light ditch, prolonged westward to the advanced ditch to check any approach round the angle of the place. The curtain here is about 30 ft. high.

On the north front the margin of land is much broader, and is cut off by a deep and broad ditch communicating with the sea, and which turns the north-west angle, and extends along the west or main front nearly as far as the great gate; it would seem that originally this ditch covered this whole front, and extended onward to the sea, but the drawbridge of the gate has been replaced by a causeway, and the further traces of the ditch are but faint, as it has been filled up south of the causeway with some care.

In addition to these special defences the whole work is covered by a deep ditch with a high interior bank of earth, which has been cut from sea to sea right across the tongue on which the castle stands. This is about 300 yards in length, and from 50 to 100 yards to the west of or in advance of the west front, forming a broken curve with its salient near the centre. In outline it is rude, and as it bears no traces of masonry was probably stockaded. The notch for the entrance is placed considerably to the north of the main gate, so that the approach was oblique and exposed to be enfiladed from the castle. This work looks rather like an English addition before the arrival of the Normans. There is no trace of any rectangular camp or earthwork of earlier date than the walls. They are built upon the natural ground, and there is little or no difference between the interior and exterior level. In what condition the Romans left, or the Saxons found, the works which have thus been described, is not known. So convenient an enclosure, so well posted, could scarcely have been neglected by any people.

In Domesday, "Porcestre" is a manor, and is the subject of a long and rather detailed entry. Mention is made of a "halla," or mansion-house, or hall, but none of the castle. It had possibly been disused as a fortress, though probably then and long before a parish, with a church within its girth.

The Normans were for a time content with the existing wall; for it was not till about 1133 that Henry I. here founded a priory for Augustine canons, and built the small and plain, but very complete, Church of St. Mary, which was also the parish church, and most of which remains uninjured. Probably a little before this, judging from the internal evidence of the buildings, he proceeded to convert the Roman into a Norman fortress. This was effected by placing a rectangular keep at the north-west angle, about 10 ft. in advance of the line of wall, removing for this purpose about 60 ft. of the adjacent curtain on each face, and the capping bastion of the angle. The projection of the keep is mainly inwards. It seems to rest upon the natural soil, at that corner slightly elevated. It has been thought to stand upon an artificial knoll, but more probably its base has been banked round by the earth removed from the ditch, which is here both deep and broad. The keep required defence from the large interior court, as well as from the field. To afford this, and also to divide the castle from the church, Henry further enclosed a base-court, of about 67 yards east and west, by 47 yards north and south, or about one-fourteenth of the whole area, in which detached space the keep stood, and of which the great curtain formed the north and west sides. The entrance was in the south face, near the south-east angle, and this inner wall was covered by a wet ditch, fed by a culvert in the north curtain from the exterior tidal ditch, and which completed the isolation of the inner from the outer ward.

The church was placed in the south-east corner of the outer ward, diagonally opposite to the new ward, to which its enclosure corresponded. The conventual buildings stood against the church on the south side, and extended to the Roman curtain, which bears marks of Norman alteration. At Caister, in Norfolk, where the parish church stands within a similar enclosure, it occupies the south-west angle. The wall which, it is probable, cut off the monastery from the rest of the outer ward, is gone. The western or landward gate-house of the outer ward was remodelled after the Norman fashion, but the eastern or water gate was left unaltered.

The keep answers to the usual conditions of such structures. It measures at its exterior base 65 ft. north and south, by 52 ft. east and west; and was, as originally built, about 55 ft., and as completed, 100 ft. high. On its west front three broad pilaster strips, of slight projection, rise from the ground, independently of the plinth, to rather above half the present height of the tower. On the north front the arrangement is the same, save that the lower half of the pilaster to the east is united with the wall of the forebuilding that covered the entrance to the keep, on the east face. The south face has only two pilasters, that in the centre being omitted. The east face is again different; here the basement is covered by the forebuilding, and there is but one pilaster, at the north end. These pilasters in the north, west, and south faces, rise plain to the second-floor level, where both wall and pilasters are reduced by a set-off. The wall is not again reduced, but the pilasters have two or three rapid sets-off before they die into the wall. Near that was the base level of the original parapet. The angles are solid, that is without nooks. The two pilasters covering the south-west angle have a slightly bolder projection than the rest, and contain a well-stair, the head of which opens in a low turret. There are no turrets nor trace of them at the other three angles. They were the natural finish of the pilasters covering the angles, and as these are not carried to the summit it is possible that the usual turrets were also omitted. The present battlement is probably in substance of Decorated date. The north and south parapets are horizontal, but those to the east and west rise to the centre so as to form a very low-pitched gable, a very unusual outline in such a building, and for which there is nothing in the arrangement of the roof to account. The exterior of the keep is very free from ornament. The only exception is a string-course about 12 ft. above the base on the west wall, which has on its under side a billet moulding of great delicacy. This string is confined to this face, and to the wall, being stopped by the pilasters.

The material of the keep, inside and out, is chiefly of Caen stone ashlar for facing, with hearting of chalk flints. The stones are from 4 in. to 6 in. square on the face; high up they are perhaps a little larger, but there is little difference between the original work and the additions. The stones of the parapet are still larger, and seem, from the accounts, to have come from the Isle of Wight.

The walls at the base average about 11 ft. thick, and at the first floor about 7 ft. At the summit they are about 6 ft., the reduction in thickness being thus unusually small. The interior is divided throughout by a cross wall running east and west, from 5 ft. to 3 ft. 6 in. thick. It has a basement and four floors. The entrance was in the first floor, and a spiral stair, the only one, occupied the south-west angle and rose from the first floor, and it may be from the base, to the battlements, communicating with, probably, each floor, by doors, of which all but one are walled up. In the south-east angle was the pipe of the well, with similar communications. The floors throughout were of timber, the beams resting in holes in the wall. The interior sets-off, reducing the thickness of the wall, are irregular.

The two basement chambers are not quite equal, the southern being the larger. They are about 12 ft. high, each has a loop in its west end and two in the north and south walls, six in all; these are of 6 in. opening, round-headed, and placed in splays of an hour-glass section, having recesses inside and out of 2 ft. opening. The door to the well-pipe is visible, though blocked, but that to the stair seems to have been closed and obliterated. Each of these chambers is vaulted with a low-pointed barrel, running east and west, and stiffened by six very deep slender ribs, with hollow chamfers. These have been cut away from the vault, but the gable ribs remain attached to the wall, and sections of the others are seen at their springings. This work looks Early Perpendicular, or, perhaps, a little earlier. It is excellent, and much too good for a cellar, though no doubt intended specially for

the custody of the royal prisage wines, which formed a part of the revenue, and were often stored here. There is a door between the vaults, near the west end of the cross-wall, and an outer door in the east wall of the south vault, which latter was probably opened when the vaults were turned, and the spiral stair closed. This, however, may be an original door opening from the basement into a dungeon in the base of the forebuilding, or it may have been connected with an outer door in the forebuilding itself. It is difficult to be sure on this point.

The first floor is also of two chambers, 43 ft. long, and 21 ft. and 18 ft. 6 in. broad. These floors contain the two state-rooms, which, to the timber ceiling, were 24 ft. high. In the north and south walls are in each two windows, round-headed, of 2 ft. opening, of hour-glass section, with splays of 3 ft. opening outside, and 5 ft. inside. The sill of the recess is 4 ft. above the floor, and the recess 12 ft. high. Its angles are occupied by a bold bead, or engaged shaft, with bases and foliated caps, whence the bead is carried round the head. Besides these four windows, in each west end is another, of the same character, but with recesses 20 ft. high, and without beaded angles. The two south windows were probably walled up when the exterior smaller hall was added, and light ceased to be an object in the keep. In the north chamber the west window is also closed. The doors to the well-shaft, and the stair, have been closed in modern times. In the cross-wall is a large modern breach. The old door was near the west end; also, in the south-west angle of the north room, a door opened into a small garderobe in the west wall. This is partially bricked up, but the loop is seen in the central pilaster, outside. The main entrance of the castle is on this floor, in the east wall of the south chamber. It is round-headed, of 4 ft. 6 in. opening, perfectly plain, without chamfer or rebate, which, no doubt, has been cut off. It is evidently original. There are two doors in the east wall of the north chamber, but they are modern openings.

The second floor, 13 ft. high, was the attic of the original building, and a mere series of lofts. The roof was very singular. Over the cross wall was a central ridge, and over the middle of each chamber a valley or gutter, from which the roofs rose to the outer walls. As a lean-to, there was, therefore, in the cross section, a central triangle divided by the cross wall, and on each side a half-triangle, formed by the outer wall; and in each of the four half gables thus formed in the east and west walls was a small round-headed window, eight in all. The windows remain, as does the stone weather-table, by which the section of the early roof is indicated. The roofs were steep, and, therefore, no use could be made of them as a platform for machines of defence or for storing missiles. In the cross wall, here 3 ft. thick, is a tall, very plain, round-headed door, of 2 ft. 6 in. opening, communicating between the halves of the central roof. The south loft was reached by the well-stair, but how the three northern lofts were reached does not appear. In the north chamber, under the southernmost of the two east windows, are traces of a door, which no doubt led to the battlements of the forebuilding, covering the main door, as seen at Scarborough and Richmond, and elsewhere. The arrangement of the original roof resembles that of Helmsley, a very late keep, which also has been raised.

Soon after the completion of this roof, and within the Norman period, it was decided to raise the keep two stages, by which means the roof attics were converted into a regular second floor. Something of this kind was done at Richmond and at Bridgenorth.

The third floor, then built, is 18 ft. high. It is quite plain, without an opening in the cross wall, and with one small window in each west wall. How the north chamber was entered is not known. The present floor is from 3 ft. to 4 ft. above the original one. The next is the fourth or upper floor, about 15 ft. high, with a cross wall 3 ft. 6 in. thick, of rough rubble, while the outer walls are of ashlar on both faces. The south chamber has four windows; those in the south wall of two lights flat-headed, but under a full-centred arch of relief outside, and within placed in a recess, also full-centred, of 5 ft. 6 in. opening. The whole are quite plain. There is a similar window in the east end. The west-end window is of similar pattern, but with a single light; and of the north chamber, two windows in the north side and one in each end are also of one light. In the east wall of this chamber a small door opens by an L-shaped mural passage turning the north-east angle into a garderobe, having a loop in the east wall, and a vent opening directly outwards on the face of the north wall. At Brougham is a similar arrangement for an oratory. In the south jamb of the west window of the south room a small oven has been excavated. As this could not be reached from the old floor level, it is probably very modern. Whether the well-pipe is brought up through the new work does not appear, nor is there any trace of an original opening from the turnpike stair, though probably there was one. The door in the cross wall, of 4 ft. 6 in. opening and full-centred, is placed near the west end. This has a rebate, so that the door opened into the north chamber, and was bolted on that side.

The original roof of the Norman addition was flat, as shown by a bold weather-table carried round the walls; but the actual present roof is exactly the reverse of that described below, there being a central and two side gutters, and a ridge over the centre of each chamber, an equally impracticable roof for a defensive platform. The flat or nearly flat roof much resembled that now upon the White Tower, London. The parapet can be examined from the top. The embrasures are at long intervals, and 4 ft. 6 in. deep by 2 ft. 3 in. opening. No traces of angle turrets are seen save at the stair head, and that is but a small affair. No fireplace has been discovered in the keep, and only two mural chambers, both very small, for garderobes. The absence of ornament or of any very well marked state-room with mural closets, is probably due to the late date of the keep, and to the construction at the same time of more convenient domestic buildings in the inner ward.

The forebuilding was part of the original design of the keep, of the lower part of which it is a prolongation, of the same breadth, and 25 ft. deep, eastward. Its walls, as thick as those of the keep, also contained two chambers, divided by a cross wall, east and west. The northern chamber is now filled up, and possibly always was so. The southern chamber seems originally to have had no outlet, and if used as a dungeon or cellar, it was probably reached by a trap in the timber floor.

The first floor of this structure, at the level of the same floor of the keep, was divided also into two chambers, between which was a passage, which led from an outer stair to the door of the keep. The north chamber has been defiled by use as a dust-house and garderobe for modern prisoners in the keep; but an elegant oriel window in the late Perpendicular style inserted into its north wall shows that it has been a room of some pretension. The south chamber was the chapel of the keep. In its west wall, the wall of the keep, is a large full-centred recess, about 11 ft. broad and 2 ft. deep, for a seat, and in the south wall remains half a Norman window, which originally opened into the inner ward.

The original roof of the fore-building had rather a high pitch, of which, over the chapel, the weather-table remains. This was superseded by a higher roof, but at a very low pitch, suitable for lead. The top of both roofs reached nearly to the level of the floor of the second story of the keep. The battlements of this accessory tower were 15 ft. to 20 ft. below those of the original keep. The approach to the first-floor of the forebuilding was by an exterior staircase of twenty-six steps, placed against its east wall, so as to reach the outer door about the centre of the building, and leading on also to the north curtain. The present staircase is modern, but a careful examination will show Norman remains about its base. It would seem that when the keep was raised it was decided to make a door in the south wall of the forebuilding into the space below the chapel. When this was done the wall was thickened on the outside. The door still remains, but opens no longer into the open court, but into the basement of a later building. Part of the added facing has fallen off, and the old wall is seen, with a billeted string corresponding to that upon the keep. In later times a Perpendicular window has been opened in the chapel-wall above, and a second Perpendicular door into the space below. This is the door which has over it the arms of Queen Elizabeth in stone, and which was probably made by some earlier monarch to admit the wine-tuns into the vaults of the keep.

The inner ward is still bounded to the east and south by the original Norman wall of Caen stone, 6 ft. thick. The original domestic buildings were ranged along the south side to the west of the entrance, as traces of the original walling still show. At the south-eastern angle was a large rectangular tower, of 23 ft. breadth by 25 ft. projection, placed diagonally,—not a usual Norman arrangement. The walls are 6 ft. thick, and the gorge is open. It was of two stages, the basement being one, had timber floors, and was, no doubt, like the middle gate-house of the Tower of London, boarded in the rear. The two exterior angles are hollow, or nooked, though without shafts. The upper floor was lighted by three narrow roundheaded loops.

Whatever may have been, in Norman times, the extent of the offices, at present these buildings cover three sides of the court, that to the north being open. Near the centre of the court was a well, and in the north wall, close to the steps of the keep, a small postern; at the north-east angle, partly on the two curtains, is a rectangular tower of great strength, about 26 ft. by 30 ft., with walls about 6 ft. thick. Its basement seems to have been used as the great kitchen, though not originally constructed for that purpose. The upper floor is on the level of, and entered from, the north curtain; its north and east walls are pierced by a mural gallery, 3 ft. broad, with two loops to the north and three to the east. There is also on that side a door opening on the main curtain. From this floor a well-stair, near the north-west corner, ascends to the battlements. The base of this tower seems Norman, but the upper floor and battlements are Early Perpendicular.

Of the domestic buildings there is built against the keep and the west curtain the smaller hall, 18 ft. broad by 30 ft. long, one end abutting on the keep, the other on a retiring-room common to it with the great hall. It is of two floors, the lower on the ground level, having a handsome door and windows. The hall, with a timber floor and roof, occupies the upper floor. The fireplace is in the middle of the west side, let into the Roman curtain, which has been raised. In the east side are four windows looking into the ward, each of two lights divided by a transom, with cinquefoil heads.

Set against the keep, and also abutting on this hall, is a building of two floors, the uppermost of which seems to have been a chapel, superseding that of the keep with which it communicated. It has an east window flanked by two diagonal buttresses. Opposite to this, against the south curtain, is the great hall. This is 67 ft. long by 28 ft. broad, also of two floors, the basement having been probably a cellar. In its north wall are arches as for a battery, and some remains of the original Norman walling, probably of an earlier hall. In the north side are four windows, three to the west and one to the east of the great door, in front of which is a handsome Perpendicular porch with vaulted roof, and steps leading up to the hall. From the porch a well-stair and short gallery led to the music-gallery at the east end of the hall, and at this end also, in the south wall, is the great fireplace. If this was the dais end, the gallery must have been above it,—not a usual arrangement. The hall had a wooden floor and a low-pitched roof. The porch seems later than the hall. East of the hall are other smaller rooms, abutting against the wall which flanks the entrance-gate. Beyond this gateway the remainder of the south wall, and the whole of the east wall to the kitchen tower, are occupied by buildings of Tudor date,—mere shells, probably servants' lodgings, butteries, and rooms connected with the kitchen department. It is said there were buildings against the north curtain, but of such there is now no trace.

How the ramparts of the west, south, and east walls of this ward were reached is uncertain. There is no way to them from the keep or from the kitchen tower. The north curtain is reached by a short stair from the fore-building. This curtain is here 10 ft. thick, and has a rampart-walk 6 ft. high, with a high parapet and rere-wall. One of the old Roman bastions occurs on this part of the curtain. It is solid below, and has been raised to contain a small chamber, the floor of which is a little below the rampart level, from which a door opens into it. There is also a good west window of two lights, cinquefoiled, opening on the rampart-walk, and a small fireplace; altogether far too comfortable a post for any officer on duty. East of this bastion the hollow angle between it and the curtain is crossed by an oblique arch or squinch, of two rings of voussoirs of excellent Decorated work, which supports a small garderobe, such as is seen on Southampton walls and at Ludlow.

There remains to be described the gatehouse, or entrance to this inner ward,—a very curious structure, of unusual length, and of three

periods. First, approaching from the outside are two parallel walls, 5 ft. thick, and 9 ft. apart, from within the ends of which hung the drawbridge, apparently without any special arch or gateway. In one wall is a squint loop, commanding the approach from the great gateway of the outer ward. From the drawbridge a passage, at first of 9 ft., and then of 10 ft. in width, and 15 ft. long, ends in a portcullis and gateway, the whole 2 ft. deep, and 9 ft. of opening. Beyond this the passage continues 10 ft. broad for 17 ft. So far, the road was either open or roofed with timber, and all is of Perpendicular date.

Next follows a remarkably fine archway of the Decorated period, deeply moulded and portcullised, with a rebate for a door. This leads into a sort of peristyle, 8 ft. deep, vaulted and groined, with ribs and bosses, and ending in a second and rather lower portal. In this peristyle are two lateral doorways, of 3 ft. broad, opening upon the scarp of the ditch between it and the curtain wall, just as at Hawarden, only there they open from a chamber on the counterscarp. The arch in which the peristyle ends is rebated for a door, but has no portcullis grooves. The Decorated work here ends, the portal being seen to mask the original Norman entrance. This is a perfect, plain, square-jambed Norman entrance archway, placed in the front and centre of the original gatehouse, which was a plain rectangular tower of 23 ft. projection from the curtain, and 28 ft. broad. Entering, the way lies between two lofty walls, 19 ft. apart, and which for 22 ft. are those of the old Norman gatehouse, with two lateral loops raking the curtain. There was a timber floor above this passage. The walls are then continued 28 ft. further, on the left being the rooms attached to the great hall, on the right those of Tudor date. Thus the entrance to this ward is about 100 ft. long, defended by a drawbridge, a portcullis, and two sets of gates.

The two gatehouses of the outer ward next require attention. The water-gate is, in substance, Roman. It was 26 ft. square, with walls 6 ft. thick, having no projection outside the curtain. All is perfectly plain, without buttress, chamfered edge, or moulding. The way lies through two doorways, opposite each other, of 8 ft. 6 in. opening. The inner arch is built of white limestone, with a few blocks of blood-red iron sandstone. The voussoirs are heavy, and a single ring. The walls generally are of coursed flint rubble, very open jointed. In the Decorated period a sort of porch, of 20 ft. projection by 12 ft. in breadth, was added upon the outer face, in the centre of which is an outer gateway, portcullised, and flanked by a pair of buttresses, placed diagonally. Over the gate is a small window, and in the side walls two loops raking the curtain. The old Roman doorway in the line of the curtain has also been altered and refaced in the Decorated period, and a rebate added for a door. The roof was of timber, and there was an upper floor, no doubt an addition. This was reached by a well-stair in the south-west angle, rebuilt for the purpose, and entered by an interior door.

A study of the water-gate will throw much light upon what has been done at the land-gate, which was evidently built originally upon the same pattern. Here the Roman work was either pulled down and rebuilt of the same dimensions, or, which seems more probable, the Roman core has been preserved, and a Norman facing applied. The inner gate is perfectly plain, save that the arch springs from a simple Norman abacus, which is continued outside the wall as a string. The outer gateway has not even the abacus; but it is masked outside by a handsome Decorated portal, with a drop arch and good moulded jambs, and an exterior drip. There is no portcullis, and no middle gate. The space between the gates, a square of 14 ft., was vaulted over from four heavy corbels in the angles, from each of which sprang five ribs, two placed against the walls. There was a plain but hollow chamfer, and they met in a central open circle, and four half circles against the four walls, connected by four ridge-ribs. The whole is of Late Decorated or Early Perpendicular character.

Here, also, an upper floor has been added, and remains pretty perfect. The chamber is barrel-vaulted, the axis being east and west, and strengthened by seven plain chamfered ribs, of which the springings remain; but the rest, with the vault, are gone. The vault seems to have been pointed, and looks Perpendicular. This room had windows over the gateways. It was reached by a straight staircase, placed in a projection parallel to the north wall, on the north side, and vaulted over. The stair-head opened on the left into the upper chamber, and on the right upon the curtain. There is another door on the south side of the chamber opening on the opposite curtain. This gatehouse has a perfect and very handsome parapet, with merlons and embrasures of equal size, and a bold moulding is carried round each.

A few yards north of this gatehouse a small lancet doorway has been opened in the Roman curtain, probably as a postern. At present it is a mere rough hole; but it looks old, and had it been very modern it would have been lined with brick.

The structural history of the castle is tolerably plainly written upon its walls. Henry I., probably before 1133, seems to have built the keep, and inclosed the inner ward, repaired the Roman curtain, rebuilt or restored the gatehouse, and placed a hall and other domestic buildings along the south side of the inner ward. It may be that Henry himself raised the keep before the works were completed, or this may have been done by Henry II. as late as 1160.

In the Winchester volume of the Journal of the Archæological Institute is a paper by Mr. Hartshorne upon Porchester, which gives some curious particulars as to its government and repairs. From these it appears that in 1220 the roof of the keep was out of order, as the constable has four "carratas" of lead for its covering. This shows that the roof then upon it was the flat one indicated by the weather moulding. Henry III., who obtained in his second, third, and fourteenth years upwards of 10*l.* for tallages from the town or manor of Porchester, suffered the castle to fall into decay, and the return of a survey ordered by Edward I. in 1274 states that the buildings within the castle are old, out of repair, and unfit for habitation. A second report was made twenty years later, after a visit from Edward in person, and repairs were at once ordered, which were very extensive, and were continued through much of the reign of Edward II. Mr. Hartshorne gives an analysis of an account of the clerk of the works here in 1321.

After the receipts, which in this year were 55*l.* 0*s.* 0½*d.*, the particulars of the expenditure are given in detail. First, the cost of the materials, then the wages of the people employed, the foundation-diggers or "fundatores," the masons or "cementarii," at 4*d.* a day; their labourers or "servientes"; the collectors of stones, "colligentes lapidum," most of which were picked up on the beach, at 6*d.* a day; throwers of sand, "jactantes zabulonis," at 2*d.*; carpenters, "carpentarii"; sawyers, "sarratores," at 4*d.*; fallers, "prostratores"; bark peelers or "scapulatores," at 3½*d.*; tilers, "latamores"; plumbers, "plumbatores"; smiths, "fabri"; labourers, "laboratores," &c. A new lock and key for the east gate cost 4*d.* Wm. Giles, the tyler, had 4*d.* a day, and Robert, his boy, 3*d.*, while covering the chamber of Edward II. Two large hawsers, for lifting timber and stone to the top of the tower, cost 43*s.* 8*d.*; thirty-two weldichboarde boards were purchased at Havonte for 4*d.* each. Thos. le Piper supplied 157 stones at 10*s.*, and their carriage from the Isle of Wight cost 6*d.* They were employed for the foundation of the bridge under the castle: probably that in front of the west gate. Peter de Pulford, as clerk and overlooker, had 12*d.* a day. These works would be all in the Decorated style, varying in detail as the style advanced. The work at the top of the keep was probably the present parapet.

About 12 Edward III. the repairs were resumed. The Queens and Knighton's chambers were repaired. A "fausse wall" was ordered to be built, and a barbican with a "brétasche" and barriers: works evidently of timber, and probably in advance of the west gate.

Richard II. resumed the works, and about 1396-7, just as the Decorated style was passing into the Perpendicular, seems to have pushed them forward with great activity. Mr. Hartshorne points out that the castle was supplied with stone from Bonchurch and South-Wight, with freestone from Bereston for doors, windows, and fireplaces; and with flint-stone and "ragplaten-stone" from Binnerbeg, also in the island. Besides these were wainscot boards, Botineholt boards, for doors and windows, hearth tiles or "hurthtighel," Flemish tiles from Billingsgate, and "reretighel" or fire-bricks, for the backs of fire-places This accounts for the early Perpendicular work found all over the castle. Probably that in the Tudor style was executed in the reign of Elizabeth, who seems to have given her name to the kitchen tower, probably in consequence of alterations made in it.

The works in modern brick were executed during the present and past centuries, when the Crown held the castle on lease, and fitted it up as a prison; building barracks, now removed, in the great court. As early as 1761 there were Spanish and French prisoners of war here; in that year, it is said, 4,000. The Dutch prisoners taken at Camperdown were stowed here, and many French taken in war. It is said that at one time as many as 8,000 were lodged here. The castle has long been the property of the Thistlethwayte family. A couple of hundred pounds judiciously laid out on the keep would close its breaches, restore the old doorways and stairs, and replace the floors at their proper level. Some such moderate outlay would also do much to improve the inner ward.

The history of Porchester is but scanty. Until comparatively modern times it was always in the hands of the Crown, and commanded by constables, whose names occur from time to time in the public records. King John, the most restless of monarchs, was here eighteen times between 1200 and 1214, in all for fifty-two days. Much mention is made of wine stored here; at one time there were thirty tuns. In 1205 the King sent an engineer and sixteen miners to stay here for twenty days, and the constable was to find twenty picked men to aid them. Also Stephen English, an artificer, was sent. This might be to dig the well in the inner ward; the keep-well must have been dug when or before the keep was founded. Sheep are sent for the garrison, sixty at a time, and petraria and mangonels, and other military stores. The tenants who held by castle guard were warned. To the castle was attached a large demesne, and a forest, under the charge of the constable, the income from which was considerable.

Edward I. seems to have been here two or three times, and Edward II. more frequently, staying here for several days in 1324-5-6. Edward III. mustered his army here before his French wars, and kept up a strong garrison and good supplies of wheat, and barley, and wine.

THE CHURCH.

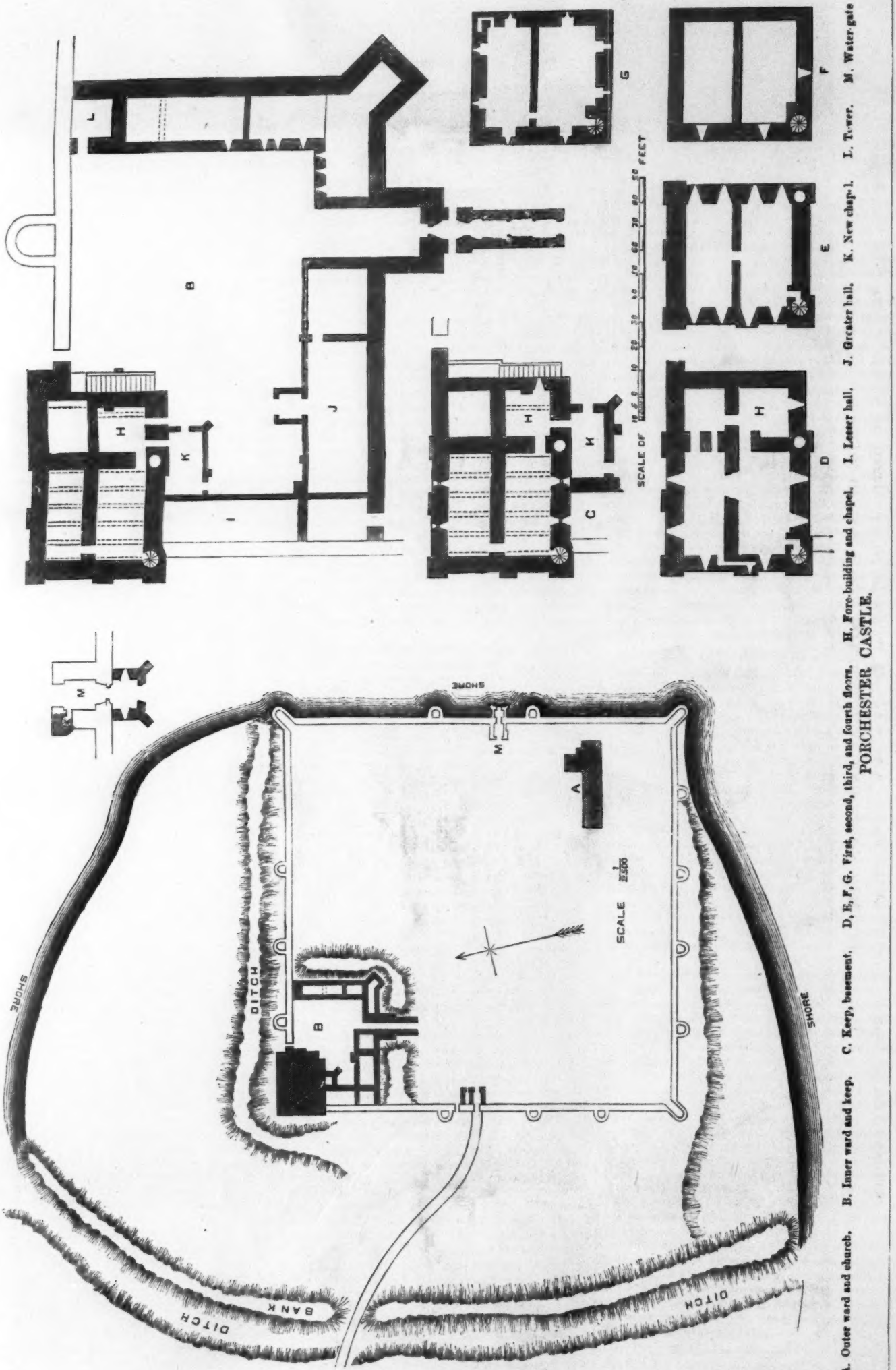
Those who visit the castle cannot pass the fine Norman church unnoticed. It is composed of a nave, central tower, north transept, and choir. The south transept has been removed, as have been the conventual buildings which stood on that side, as shown by the water-table for the roof of the cloister. The upper part of the tower has also been removed, and the north and south nave porches. The east window is modern, as is the vestry on the north. The angles of the west front are nooked, like those of the south-east tower of the inner ward, but in the church tower these angles contain a bead or shaft. The west front is excellent. There is a doorway with sculptured bands, and flanked by fluted and twisted shafts. Above are three coupled window arches, all ornate. The central is the only one pierced, but the filling up of the others is worked in a lozenge pattern. On each flank is a broad pilaster strip, and on the gable above a Norman loop.

The tower rests on four full-centred arches with flanking shafts, and above, two small Norman windows opened into the transept roofs. At the north-west angle, between the nave and transept, there seems to have been something like a room for lepers. The present door into the transept is modern, and the loop commanding a view of the altar is blocked up. There is a stone bench against the walls of the choir and transept; the font is rich Norman, in cylindrical form, with intersecting arches. In the curtain wall, south of the church, are traces of an arcade of nine small intersecting arches, about 6 ft. high, and their bases 12 ft. from the ground, and below them seems to have been a small door in the wall, no doubt a private postern for the use of the monastery. The arches have been one side of a room, probably the chapter-house.

Soon after its foundation Henry I. moved this establishment from hence to Southwick, where it remained to the dissolution. It is therefore probable that the conventual buildings were then pulled down. The transept connected with them seems, however, to have been standing within the last two centuries. G. T. C.

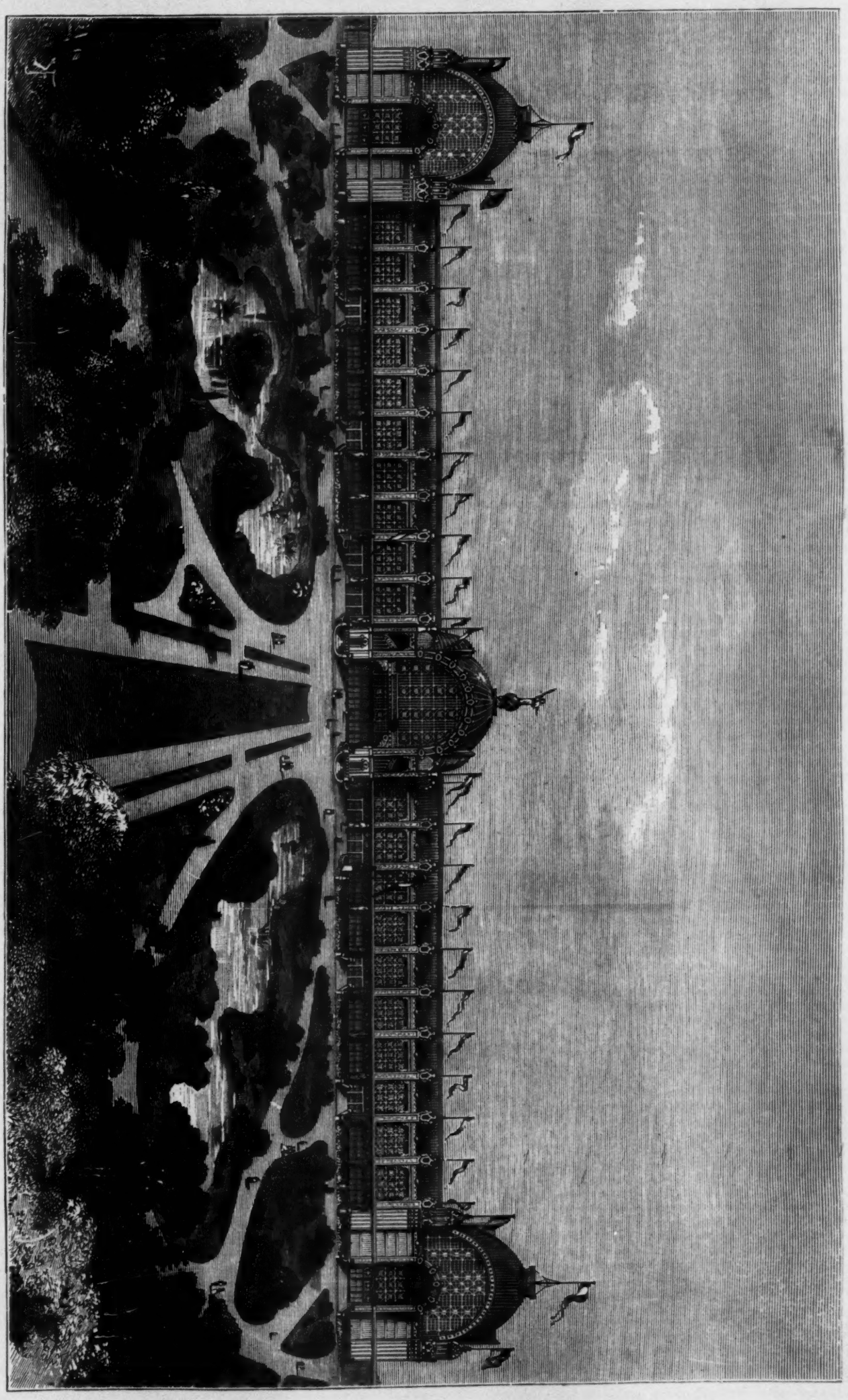
TO RENDER WOOD UNINFLAMMABLE.

SIR,—Will any of your readers inform me of a solution or otherwise to prevent or assist in preventing fire from igniting wooden buildings? H. A. P.



A. Outer ward and church. B. Inner ward and keep. C. Keep, basement. D, E, F, G. First, second, third, and fourth floors. H. Fore-building and chapel. I. Lesser hall. J. Greater hall. K. New chapel. L. Tower. M. Water-gate

PORCHESTER CASTLE.



FAÇADE OF THE PARIS INTERNATIONAL EXHIBITION BUILDING.

DIRECTOR, M. DUVAL; ARCHITECT, M. HARDY. COPIED BY SPECIAL PERMISSION FROM THE ARCHITECT'S DRAWING, ADOPTED BY THE COMMISSION.

THE PARIS UNIVERSAL EXHIBITION.

Two centuries and more have passed away since the day when Henrietta Maria, the widow queen of Charles I. of England, slowly ascended, in her by no means gaudy coach, the height of Chaillot; the unhappy Henrietta, whose father, Henry IV., had been assassinated, and whose husband had been beheaded but two short years previously, came there to found a convent, which henceforth received the name of the Monastery of the Nuns of the Visitation de Ste. Marie (1651).

Long ago as that time is, it may, without exaggeration, be said that the change has been greater on this spot within the last few months than in the two centuries that separate us from the day when the widowed queen looked from these same heights over the city of Paris, at her feet. The Revolution has passed over the spot, destroying with it the monastery, but little has it changed the aspect of the hill. How different now, when every day the Palace of the Trocadero rises, as if by enchantment.

A more detailed account of the Exhibition than we have as yet given for some time past is necessary fully to appreciate the immense progress made within the last few months. Happily no political events, either at home or abroad, have in any way been allowed to interfere with the works of the Exhibition, and the numerous contractors rival each other in their activity.

As is now well known, a vast hall (the diameter of which will exceed 50 yards) will occupy the height of the Trocadero, in which accommodation will be afforded for 7,000 spectators. The difficult problem of emptying the hall of these spectators has been happily well looked into, and the whole has been surrounded by a double wall pierced with numerous doors. From each of these, in the two-yard space which separates the walls, ascends a staircase, which will give access to the different rows of boxes; each place will have its special means of exit. We see thus that the plan of the Roman arenas has been strictly carried out, and by this means the chances of grave accidents are greatly diminished.

To the right and left of this hall the wings, of semicircular form, are rapidly approaching completion. On the side which looks on to the Champ de Mars extends the gallery *promenoir*, the columns of which are soon to be put in position. These columns, which will be of white stone, relieving on a red-coloured background, heightened with gold, will certainly produce a handsome effect.

With regard to the plan of the cascade, one of the great attractions of the Exhibition, it is now alone awaiting execution. The works possess some interest, as, to form the bed of the future fall, it will be found necessary to use blasting-powder. When completed, the cascade will be considerably larger than the famous fountains of St. Cloud; it remains, however, to be proved whether in the present century we can equal the beauty of the old cascade which forms so conspicuous a feature in that superb masterpiece of Lenôtre, the Park of St. Cloud. No expense is to be spared, some 28,000*l.* having been voted for the purpose.

On the Champ de Mars the same activity reigns as on the Trocadero, and since the recent visit of the Marshal President the progress has been great. Now that the immense work of masonry is completed, the public can easily observe the advance made daily by the different contractors. As we have already stated, the gallery of the Fine Arts is completed, while the building in which the city of Paris is to show a number of marvels to the world, is advancing. Thus at present one is able on the spot thoroughly to take in at a glance, as it were, the immense works of the Exhibition, all of which are now far above ground on each portion of the Champ de Mars. On every side rise huge pieces of cast-iron work, ready prepared, and alone waiting to be placed in their proper positions. It is owing to this fact that, in a few hours, a small gang of intelligent workmen are able, with the aid of powerful cranes, to set up masses of iron weighing many tons. Eight contractors divide the works of the Champs de Mars. The great galleries parallel to the Seine and the École Militaire are under the charge of Messrs. Eiffel & Cail. The other gallery, parallel to the Avenue Labourdonnage, is being constructed by the Compagnie des Fives-Lille; that on the side of the avenue Suffren by the Compagnie du Creuzot.

As a proof of the extraordinary activity that reigns we may mention that on the 25th of May, when the Marshal President visited the Champ de Mars, not a pillar of the gallery parallel to the river had been posed, while now nearly half of the construction is completed. Each extremity of this gallery will be terminated by domes, while in the centre a circular pavilion, looking on to the Pont d'Jéna, will serve as the principal entrance. The pavilion alone will have a circumference of forty yards, the gallery a breadth of twenty-six.

As may be imagined, great interest is shown by the public, who may be always seen watching the progress of the immense works. As each huge piece of iron arrives it is rapidly hauled to its proper position by immense cranes, and there firmly riveted. While one end of a gallery is thus hourly progressing, may be seen at the other the glaziers rapidly filling in the iron sashes.

Thus, by means of skilful co-operation, no time is lost, and every day makes it more evident that it alone remains with the rest of the world to decide whether the solemnity of next year shall take place.

When at length the Exhibition opens not a little interest will be added, in the minds of some few of the numerous Anglo-Saxon visitors, from the fact that the spot on which a part of the Palace is built has seen the sorrows of the unhappy queen of Charles I., and in later years the philosophic dreams of Benjamin Franklin.*

We publish in our present number the first correct view of the intended building that has yet been given. It shows the entrance-front, next the Quai d'Orsay, with the arrangement of the grounds as definitely determined on. The contracts already made in respect of the Exhibition amount in the whole to 25,000,000 francs (1,000,000*l.* sterling), of which 8,200,000 francs have been already expended, viz., 6,000,000 at the Champ de Mars, and 2,200,000 at the Trocadero.†

THE DOMESTIC ECONOMY CONGRESS IN BIRMINGHAM.

THE Congress on Domestic Economy, and the Exhibition in connexion therewith, were inaugurated by a public *conversazione*, held in the Rotunda of the Society of Artists, New-street, Birmingham, on the 17th inst., the mayor in the chair, in the absence of Lord Leigh, through an accident.

Several letters were read from gentlemen unable to be present, including Mr. Le Neve Foster, secretary of the Society of Arts.

Professor Huxley, after some preliminary observations, said: I am happy to say a few words upon the objects of this Congress, and the expediency of arousing public feeling in regard to the importance of the objects it has in view, because this particular subject is one which has always possessed a very great interest for me, and it happens to be one on which in former years I have expressed very decided opinions. In fact, I think I could go back as far as the year 1868, when it was my business to address a working men's college on the subject of what constituted a liberal education, and although I am exceedingly loath to quote myself, yet, if you will allow me, I will trouble you with two or three of the observations that I made on that occasion. I said:—

> "If any one is interested in the laws of health it is the poor workman, whose strength is wasted by ill-prepared food, whose health is sapped by bad ventilation and bad drainage, and half of whose children are massacred by disorders which might be prevented. Not only does our present primary education carefully abstain from hinting to the workman that some of his greatest evils are traceable to mere physical agencies, which could be removed by energy, patience, and frugality; but it does worse: it renders him, so far as it can, deaf to those who could help him, and tries to substitute an Oriental submission to what is falsely declared to be the will of God, for his natural tendency to strive after a better condition."

I believe that these words remain as true now as I think I may venture to say they were ten years ago; and although it is perfectly true that since that time the Education Act has been passed, which, whatever any of us may think about its details, or about the extent of ground which it covers, must, nevertheless, be admitted by all, I think, to have been a step in legislation of the first magnitude—I say that primary education has not in reality touched any of the points which are here referred to. . . . If people are taught reading, writing, and arithmetic, they will know reading, writing, and arithmetic; but however well they know reading, writing, and arithmetic, that is no guarantee that they will understand one syllable of their social duties, or of those conditions upon which their health and welfare depend. It is these matters, and the importance of their being impressed on our public life, which has led to congresses such as these.

The real work of the Congress commenced on the 18th instant, when, in Section A, Miss Kenrick (a member of the Birmingham School Board), presided, and Miss Mary Willis (Society of Arts Examiner in Domestic Economy) read a paper on "Needlework." Mr. Joseph J. Pope followed with a paper on "Clothing and its Materials," in the course of which he strongly condemned the "low dresses" worn by ladies at her Majesty's drawing-rooms and receptions. In the discussion which followed, Mr. Edwin Chadwick remarked that black was a colour that absorbed mephitic gases in very large quantities; and to avoid that, doctors and clergymen, who did so much visiting of the sick, should always go about in white.

In the same section, Mr. Edwin Chadwick, C.B., read a paper on "Head to Foot Washing." He said the effect of cleanliness was not sufficiently recognised. He found evidences of its effects in various ways. Dealing with the animal creation, he said the pig that was washed would put on one-fifth more flesh with the same amount of food than the pig that was unwashed. The same effect was observable in other animals. They had seen the horse washed from head to foot to give it additional force. The same argument applied to the human creature. He knew the case of an army hemmed in by the enemy and put upon half rations. They were regularly washed, and it was found after a time that the men who washed were equal in force to those who were unwashed and put upon full rations. Head to foot washing was not only important in the matter of economy in food, but also for the prevention of contagious disease. Nurses who attended scarlatina cases and other cases of contagious disease had found out that, by washing twice a day, and sometimes by changing their clothes, they might withstand the dangers resulting from the practice, and doctors who were similarly engaged had come to the same conclusion. As a defence against an outbreak of epidemic disease he would have the whole population tubbed. He mentioned that in a prison containing 1,200 persons washing was enforced, and instead of using seventy or eighty gallons of water for each bath, and causing a large expenditure of time, a very simple method was devised for giving the prisoners a thorough good bath. Each man was placed in a recess, with a spray of tepid water overhead, which completely cleansed him. Schools at which unwashed children attended were centres of children's epidemics. They were well aware of that in Holland, for if it was discovered at any school there that a child had not been "tubbed," it was taken aside, properly washed, and the mother was admonished that she must not send her child again to school in that condition. There was an enormous sanitary improvement in consequence of that rule being enforced. There had been a marked reduction in epidemic diseases, and he maintained that, in this country, a cleanliness league was quite as important to the population as a temperance league, because filth, intemperance, idleness, and vice went always together.

Papers on "Washing," by the Rev. Harry Jones, and on "Baths and Swimming for Children," by Miss Chessar, followed.

In Section B (Health), Professor Huxley read a paper on "Elementary Instruction in Physiology," which was followed by a paper by Mrs. F. C. Hoggan, M.D., on the "Necessity of Substituting Science Subjects for Fancy Work in Girls' Schools," which, in reviewing the course of instruction at present given in day schools, urged that if a few scientific subjects were included in the curriculum of education to the exclusion of many things to which now a great deal of attention was given, there would, in a generation or two, be a more powerful tone than that which existed at the present day.

In Section C (Methods of Teaching Domestic Economy), Sir Henry Cole, C.B., read the first paper, the subject being "The Practical Development of Elementary Education through Domestic Economy." In the course of it he said that the arts of reading, writing, and arithmetic were the three principal instruments for education, or drawing forth the faculties which God had given

* Franklin lived at Passy, and the street in which he resided, now running into the Place du Trocadero, bears his name.

† A view of the intended buildings at the Trocadero has already appeared in the *Builder*.

to the child, and were of necessity the basis of any system of public elementary education. These arts could be taught, but they could not be properly cultivated or well preserved without constant and intelligent use. What our State machinery has up to this time been able to effect in instilling a knowledge of the three arts was shown by the Report of the Committee of Council on Education for 1876-7. He would avoid statistics as far as possible, but he could not give an idea of what was done for nearly the two millions expenditure spent yearly without a few general figures. In 1876 there were nearly three millions of children registered as being under instruction in reading, writing, and arithmetic in England and Wales. One million two hundred thousand "passed" what is called "a satisfactory examination" in these three arts, and of this number nearly seven hundred thousand, *i.e.*, about one-fourth "passed" the prescribed test without failure "in any one of the three subjects." But the Duke of Richmond and Gordon and Lord Sandon reported to the Queen that "they were obliged to repeat the remarks which they used last year, that the results were not satisfactory, and that the "nature of the results attained by many of those examined was meagre." Their lordships said, "only thirty-eight in every hundred of children above ten years of age were presented in standards appropriate to their age," and not twelve in a hundred presented passed in the Standards IV. to VI. Referring to what the education system proposed to do, he said that the little child of an agricultural labourer, of eight or nine years old, was expected, in Standard II., to read with itelligence, to write a sentence from dictation, to know the four first simple rules in arithmetic as far as long division. Besides, it was "to point out the nouns, the definitions, the points of the compass, the form and motions of the earth, and the meaning of a map!" The very enumeration of these demands appalled him. How many, even of that audience, would come forth and stand this examination? Who would volunteer to be the examiner except one of her Majesty's Inspectors? But none of these could be present there. Should they send into those parts of Birmingham, which were shown to Mr. Cross as condemned to removal, and take at haphazard any ten children under thirteen years of age, in tatters of finery, dirty, emaciated perhaps, and see what came actually out of the present system? Should they stand as illustrative specimens in the exhibition? Did he, then, condemn learning grammar, geography, and history? God forbid. But he gravely doubted if the teaching of them took its right place in our present system of State education. Domestic economy for girls was placed by the Code in the tenth division after nine others, being—1, English literature; 2, mathematics; 3, Latin; 4, French; 5, German; 6, mechanics; 7, animal physiology; 8, physical geography; 9, botany; and 10, domestic economy. Would any one venture to say that a knowledge of health, good food, thrift, and the like was not of much greater value to every one of the three millions of children of working people (under thirteen years of age), than Latin and every other of the subjects he had named? And yet the teaching of domestic economy was discouraged unless the child "parses a simple sentence, and knows the geographical outlines of the colonies."

Papers by the Rev. J. P. Faunthorpe, and the Rev. E. T. Stevens, on "Text Books in Domestic Economy"; by the Rev. E. F. MacCarthy, on "The Mode of Inspection and Administration of the Government Grant for subjects included under Domestic Economy"; by Mr. Charles Critchett, on "The Examinations of the Society of Arts in Domestic Economy"; by Mr. G. C. T. Bartley on "School Savings Banks"; and by Dr. Langford on "A Birmingham School Board Bank," having been read and discussed,

A paper by Mr. S. Wall Richards was then read, the subject being "The Influence of Order, Method, and Cleanliness in Factories and Workshops upon the Homes of the Industrial Population of Large Towns." Having had frequent opportunities of comparing workmen's homes in the textile districts of Lancashire and Yorkshire with workmen's homes in Birmingham and neighbourhood, he had been led to inquire into the cause of the differences there were between them. Many of the houses of the operatives of the northern counties were characterised by an air of cleanliness, freshness, and an appearance of general comfort that was altogether wanting in a similar class of houses in Birmingham. A different spirit seemed to pervade the household, and was a striking feature to a resident of the midland counties. There was no doubt in his mind that the superior manner in which houses were built, and the more complete domestic arrangements that were made by architects and builders of that class of property in the North, had a great deal to do with the general cheerfulness of home life there. Working men and working women in the neighbourhood of Birmingham had not the remotest notion of the attraction of a Yorkshire fireside. Whether the bright hearthstone was the complement of the general cleanliness of the walls, which are painted (not covered with a tawdry paper, as in Birmingham), or the whitened ceiling a crowning feature of the whole, is a moot point. What was the interior of the homes like of the operatives of Birmingham? How compared it with the same class of house in the North? A single living-room on the ground-floor in a court of houses, a *cul de sac*, with no second apartment; a cramped room, with a ridiculously small fire-grate, no hot-water boiler, a small baking-oven on one side only (9 in. or 10 in. square) divided in two parts, a fire-grate, perhaps the cheapest, commonest, and most useless design ever made; no back apartment, wash or slop kitchen; no painted walls, but, instead, covered with a cheap, showy paper, that was never cleaned or changed for years,—a contrivance for harbouring loathsome insects,—and ceilings that were whitewashed at long intervals of years also. That adjunct of comfort and promoter of cleanliness and health,—a good supply of water,—the operatives here were also denied. A common pump in the centre of the court, into which the sewage might percolate and be of serious mischief, was the usual, and in most cases the only, supply. The immense difference, so much in favour of Lancashire and Yorkshire, he attributed to the order, method, and cleanliness observed in factories there, and the entire absence of corresponding rules and regulations in factories and workshops in Birmingham till recently. The magnificent factories, with every appliance and contrivance that could be suggested by human ingenuity for securing the most favourable conditions upon which the gigantic industries could be carried on, had aroused and kept alive the desire of the factory *employés* for clean, convenient houses. What had been the rule, method, or custom in Birmingham? Most factories in Birmingham might be said to consist of a series of workshops that had grown from month to month and year to year, without symmetry or design, that the largest of them were, with few exceptions, agglomerations of shops, all shapes and sizes, forming irregular masses of buildings (very frequently a congeries of six or seven houses, communicating with each other through two holes in the walls), with no principle observed securing to the workers either proper light, ventilation, or cleanliness. All those important considerations had been ignored, so that, as a rule, places are built subject to no supervision, and, in consequence, were in direct contravention of the laws of health, and sometimes even of decency. Systematic cleanliness in workrooms was a term almost unknown, he regretted to say. Except in rare instances, observed, perhaps, in not more than ten per cent. of the various trades of Birmingham; and if a hundred workshops or manufactories were visited he doubted whether, previously to the Factories Act Extension Act, 1867, more than five per cent. of them had been whitewashed in a decade, and since, from the relaxations engrafted in that Act after the most persistent opposition by the Birmingham Chamber of Commerce, and especially to the whitewashing clause, he doubted very much, up to the present time, whether the practice of whitewashing had by any means been general. To further restrict the employment of females in degrading labour he believed to be the surest means of improving their condition, physically, socially, and morally. Slowly as all these changes were brought about, a change was coming over the habits of Birmingham industrial life; thanks to the unremitting efforts and untiring zeal, coupled with long experience, of Mr. Robert Baker, her Majesty's inspector of factories of the district. The influences of the factory and workshop were undoubtedly the most powerful in the life of an operative; they might be good or bad; the employer was frequently the only person occupying a high social position that the employed came in daily contact with: how important, then, that the influence should be of the right kind; what a powerful agency it might and could be made! As a manufacturer, engaged in one of the staple industries of Birmingham, he maintained that there were not any insuperable difficulties to be overcome by four-fifths of the trade here in any endeavours employers might choose to make to bring about a better state of things. If they desired order, method, and cleanliness in their establishments, the reforms were easy of accomplishment, and the inclination for them existed. The great variety of trades, and large number of small masters,—who were constantly with their workpeople, and, therefore, were supposed to have the influence of personal supervision,—made the attempt easy. His firm employed upwards of 400 operatives, three-fourths of whom were females. He did not know of any beneficial change that suggested itself for their consideration that they should hesitate to make. The time-honoured institution of Saint Monday, for example, was not known with them. For many years the Saturday half-holiday was an institution that had been observed. Again, they had a rule which was cheerfully obeyed, and it was this,—that the floors of every room in the factory in which any persons were employed be scoured with soap, soda, and hot water once the last week in every month. Some of the rooms were 150 ft. in length. They had another rule, that every alternate month the windows be cleaned throughout the works; and what was the result? Why, an amount of cheerfulness and brightness not common in Birmingham manufactories. The average sickness last year was four days for each member. At the present moment they had not a healthy public sentiment influencing the masses in the matter of cleanliness. The municipal authorities and other governing bodies of our town give little heed to it. After factories and workshops, the dirtiest buildings in Birmingham belonged to the corporation and public bodies. Only last week the chaplain of the borough prison made formal application to have the rooms and passages of his residence (which belongs to the town) whitewashed and coloured, pleading at the same time that they had not been done for six years. Perhaps the most unwholesome public room that they had ever had in Birmingham was the lecture-theatre of the Midland Institute,—a room that was used periodically for the delivery of lectures on the laws of health. To his knowledge it had gone as long as six or seven years without a coat of whitewash. Again, their School of Art was whitewashed and cleaned down a year ago, the first time for eight or ten years. It is all the more remarkable that Birmingham, occupying such an advanced position in many matters, should be so indifferent to this momentous and vital question.

This concluded the first day's proceedings.

On the second day (the 19th inst.), in Section B, Mrs. C. T. Bracey read a paper by Mrs. W. E. Gladstone on "Nursing for Artisans and Cottagers," and Miss Helen Taylor made some remarks on "Nursing in Connexion with Education." Mr. Lawson Tait read a paper on "Provident Dispensaries as a Means of providing for Sickness," in the course of which he remarked upon the pauperising effect of some of our large hospitals. Miss Rose Adams followed with a paper on the good work that has been done by the Ladies' Sanitary Association.

Dr. Carter next read a paper on "Buildings for Working Men," by Mr. R. Rawlinson, C.B., who was unable to be present. Every working man's house, it stated, should have sitting-room, kitchen, and scullery, and three good bedrooms. The sitting-room should not be less than 12 ft. square, and none of the rooms should measure less than 9 ft. from floor to ceiling. He then went on to speak of the sites of these houses, many at the present time being built on land little better than a swamp, simply because the land was cheap. The paper went on to speak of the manner in which dwellings were huddled together in large towns, and drew attention to the need for more stringent regulations with regard to their erection.

Dr. Alfred Hill read a paper on "House Drains in their relation to Health." Every subject on the programme of the Congress, he said, was more or less intimately connected with health, and none of them were more important in this respect than the subject he had to introduce. It was difficult to excite an interest in such a topic, because it was scarcely tangible; drains were invisible, and their effects to ordinary minds were not easily seen. But imperfect drains brought sickness into many homes, and led to the sacrifices of many thousand lives. The danger from drains was increased in the present day, when for convenience closets were inside the house instead of out of it, and the connexion existed between the house and the drains by a

dozen different channels. Dr. Hill then went on to consider the question under three heads,—the absence or deficiency of drains, defective drains, properly-constructed drains. In dealing with the latter point he showed a number of diagrams to illustrate a system by which the noxious gases of the drains were prevented from entering into the house. The ordinary syphon, he said, was not sufficient, for in the case of a flushing the foul air was forced through the water-valve formed by the syphon into the house. There should be two outlets for gas in the drains,—one on the ground and another by means of a pipe carried above the roof, and the system was so arranged that a pure current of air entered at the bottom and went right through the drain continually. He had taken the trouble to send out these drawings to persons who were interested in the question, and he should be happy to give any information or supply diagrams to any of those present.

Mr. Frank Curzon said the paper he had in his hands on "The Appointments and Appearance of the Workman's Home" was far too long to be dealt with *in extenso*; he should, therefore, refer only to one or two points that he wished to urge emphatically. They had heard a great deal from the preceding speakers with regard to the construction of dwellings and their sanitary arrangements, and he would devote the little time at his disposal in showing how the working-man's home could be made comfortable. He congratulated Birmingham in inaugurating the first Congress of this description, and in reference to the active efforts of Sir Henry Cole he said that by his efforts in South Kensington Science seemed to have received a soul and Art to have become a religion. He then went on to refer to the cheerless houses of many of the working classes, and pointed to the Building Society, by which a man was enabled to become his own landlord, as the best remedy. This house was to cost not less than 200*l*. As to its situation, it should certainly not be in the heart of a crowded town; his early experience had taught the workman what that meant, but some half a dozen miles from his work, in a clean, bright district, if nothing more, and where the railway gave him a cheap workman's pass. It was to have a little ground about it, a decent plot of grass in front, small yard behind, where the outbuildings were compactly arranged on the best sanitary principles, at a somewhat higher cost than usual, because what one had to economise here is, not money, but health and life. The house should have five rooms, two below, three above. The rooms below should be—a living-room behind, a bright kitchen, with covered sink, low mantel-piece, ample cupboarding, a range which Mr. Buckmaster might approve, an immovable stone fender, a good wooden floor, well excavated beneath, and a broad window. Mr. Curzon concluded with a reference to the furnishing of the house, in which respect he observed that the taste of the working classes sadly needed education.

Captain Douglas Galton, C.B., followed with a paper on "Warming and Ventilation." He said there was perhaps no subject connected with the economy of the dwelling which had so great a range of importance as that of warming and ventilation. It involved health, comfort, and expense. Ventilation was the science which enabled us to regulate the purity of the air within our houses, by renewing our supply from the outside; and the problem of ventilation included a consideration of the degree of purity possessed by the outside air, as well as of methods by which fresh air can be most advantageously admitted into, and vitiated air removed from, the house. The simple forms of ventilation rested on the principle of an outlet for the warmed air, and an inlet for fresh air. The position of the inlet was of material importance, because the question as to whether draughts were felt or not necessarily depended upon that. For this reason it is desirable to admit fresh air, especially cool air, at the upper part of the room, above the heads of the occupants, and to break up the stream by admitting it to numerous inlets. It thus becomes partially warmed by the air already in the room. He then explained the various processes by which the temperature of a room could be regulated, and the importance of a thorough knowledge of the subject.

Mr. George Skey said that during the preceding papers he had been trying to carry out in his own mind the various suggestions offered. In others words, he had been building a house according to the suggestions of Mr. Rawlinson, draining it according to the admirable arrangements of Dr. Hill, and having the appointments and appearance of the working-man's home precisely in accordance with Mr. Curzon's suggestions, and the warming and ventilation in accordance with those of Captain Galton. But he wished to introduce into the discussion a disagreeable element. What about the £. s. d.? Twenty-five years ago his attention had been called to the subject, and he had built what people had been pleased to call "model dwellings" for the working class, but the return he had received did not amount to 3 per cent. In a lengthy speech he enumerated other instances, and in conclusion he said that if a plan could be shown by which these houses could be built on an economical scale so as to pay even 4 per cent. on the outlay they might get them built, but not otherwise.

General Cotton said with regard to the difficulties of getting houses built on sanitary principles great changes had taken place during the past eighteen months. Builders in London knew now that if great attention was not paid to their houses, they could not sell them when built, and so they were led to pay every attention to the matter.

The Rev. Brooke Lambert, referring to Mr. Skey's remarks, said good houses were built in London on the system which had been discussed, which returned 5 per cent. on the outlay.

This ended the morning sitting of the second day of the Congress.

The greater part of the afternoon sitting was devoted to "Food and Cookery."

The Congress, which is generally regarded as a great success, was brought to a close with the usual formal votes of thanks, especially mentioning Sir Henry Cole; and, on the motion of Mr. Trace, of Manchester, it was resolved that in view of the beneficial and practical results from this Congress, it was desirable that the Local Committee and Sub-committee remain in action until the next annual Congress, which had been announced by the Society of Arts to be held in some part of Lancashire in 1878.

CANFORD CHURCH.—A RESTORATION.

SIR,—Notwithstanding M. Loftie's fiery denunciation of modern church architects and their restorations, I venture to bring to your notice a work recently completed in Dorsetshire, which seems to me to be deserving of much praise. No doubt, from the denunciatory point of view, all that has been done here or anywhere else must necessarily be wrong, for if a restoration be so well executed as to appear a part of the original structure, it is said to be a sham; and if it be in the style, if such there be, of the nineteenth century, it is said, with much truth, to be out of keeping, so that the safest plan is to do nothing: this course, at least, would either not be denounced, or spoken of in far from severe terms. To this course there is but one objection,—that, if followed, our churches would gradually fall into ruin. Now I am neither a clergyman nor an architect, nor a patron of a church, but only a layman who has been obliged by circumstances to rebuild a chancel, and to be largely concerned in building a church, and this has led me to take an interest in these subjects, and to arrive at the conclusion that there are architects, and that Scott and Street, at least, are among them, whose restorations are such as the original builders of our churches would have approved. With the church I am about to describe I have nothing whatever to do, but, happening to visit it some time ago, I was led to pay attention to its condition before the late alterations, and, in consequence, to examine them after their completion.

Canford is a very ancient, a very curious, and, alterations and repairs notwithstanding, a tolerably perfect structure in the Norman style of architecture. It has recently undergone a thorough and much-needed repair; the fittings have been removed, and the plaster scaled from its interior, in consequence of which much is exposed that before was covered up, and the history of the building is laid open so far as it can be deduced from the evidence of its details.

This church stands in a small churchyard on the right or south bank of the Stour river, a mile or so below Wimborne Minster, and some miles above its union with the Salisbury Avon, and their joint discharge into the sea near to the castle and church of Twynham or Christchurch, and below the headland known as Hengistbury, a district rich in memories of the later British and earlier English contests. The church stands about 100 yards from, and 8 ft. to 10 ft. above, the stream, close to the very ancient wear and water-mill, and a little above the site of the old Manor House, the "Caput" of the "Royal Lordship" and "Peculiar" of Canford, and the seat, from a remote period, of a succession of royal and noble personages. Of the ancient house, the kitchen, attributed to John of Gaunt, and apparently of his age, alone remains, and, still in use, forms a part of the modern mansion, the work of Blore and Sir Charles Barry, and the residence of Sir I. B. Guest.

The church is composed of a nave and chancel, each with aisles, and a tower. The southern aisles are continuous, and the northern communicate through the tower, which is placed between them, on the north side of the junction between the nave and chancel. At the east end of the south aisle is a sort of transept, opening from the chancel, built probably as a mortuary chapel, and afterwards used for the holding of the court for the Peculiar.

The *chancel* measures inside 40 ft. by 15 ft., with walls 3 ft. thick. It opens into the nave by a large arch, of Decorated date. In its east end is a window which, with the wall above its cill, is modern. This window replaced a Jacobean insertion of four-lights, flat-topped. It rests, internally, upon a bold half-round string, which is returned about 1 ft. 6 in. along each side wall. The wall below is probably of the age of the string, and of the tower. The lateral walls are original, and apparently the oldest parts of the church. Each is pierced by four full-centred arches, quite plain, opening into the aisles and tower. Of these the two eastern open from the dais of the altar, and are of 7 ft. span. The two next are, that on the north, 6 ft. 6 in.; that on the south, 4 ft. 9 in. span. Then follow two small doorways, also full-centred, of 3 ft. 3 in. opening; but, while that to the south is perfectly plain, that to the north has a rebate for a door, the lintel of which is flat-topped and shoulder-headed, the shoulders being two small brackets, having a bead-moulding and below it a hollow chamfer. They seem as old as the doorway, and are of white stone, the rest being blood-red. The pair of arches next west of the doors are, on the south, 4 ft. 9 in. span, and on the north 5 ft., opening into the tower.

Above the springing line of these arches are traces of original windows. In the inner face of the north wall is one jamb and part of the full-centred arch of a window, which has been cut into and blocked when the arch below was opened. In the south wall nothing is visible inside, but outside is the jamb of a loop and part of its head. It is evident that the original chancel had no aisles, but was lighted by two or, perhaps, three full-centred loops in splayed recesses high up in its side walls. There was, of course, a longer east window resting on the string. The fact of the addition of the aisles is confirmed by the remains of a plinth outside the south wall. As there is no trace of the string having been carried along the side walls, it is probable that when the arches were cut, and the loops closed, on the addition of aisles in the late Norman period, the east wall was rebuilt from the foundation with the contiguous ends of the side walls. The chancel has a good barrel or cradle roof by Brandon, and carved stalls are being placed on either side. The chancel is no doubt early Norman, and the arches were opened in the later Norman period.

The *chancel aisle, north*, is 28 ft. long by 7 ft. 6 in. broad, dimensions which evidently point to the Norman period. In the east end is a small two-light lancet window in a splayed recess, with a drop arch, the voussoirs of which are mostly of white stone. In the north wall are two lancet loops and a small shoulder-headed door. These walls seem to have been rebuilt; but with the old stones and on the old lines. Against the south wall are several plain stone corbels, which probably supported the hammer-beams of the original roof, which was a high-pitched lean-to. In the west end an arch opens into the tower.

The *chancel aisle, south*, is 22 ft. by 10 ft. 6 in. Its south wall seems Decorated, as certainly is its western arch, opening into the nave aisle. On the north wall is seen the external plinth of the original chancel, and the orifice of a loop high up, with a line of corbels as in the north aisle. In the north-west angle, 10 ft. from the ground is a small broken doorway which led into the rood-loft. In the east end a drop arch, boldly chamfered, of Decorated date, opens into the chapel. In the south wall is a Perpendicular window, flat-topped, of three lights. There is also a door, in its present form modern, but with

traces of an earlier one. This aisle seems to have been rebuilt in the Decorated period.

The *transept* or *chapel* at the east end is 16 ft. 6 in. east and west, by 16 ft. It occupies the south-east angle of the church. In its south end is a flat-topped Perpendicular window of three lights, trefoiled, and rather earlier than the window in the adjacent aisle. The east wall is solid, and flush with the east wall of the chancel.

The *nave* is 54 ft. long by 15 ft., but of the length the western 18 ft. were added thirty or forty years ago, in the taste of the day, and have recently been rebuilt in keeping with the rest of the building. The chancel arch is equilateral, of 14-ft. 6-in. span. It has a bold central rib, chamfered, as are the edges of the voussoirs. This is a Decorated insertion, replacing, no doubt, a smaller Norman opening. The side walls contain arcades of two arches on each side. These are 10-ft. span, with an intervening pier 7 ft. 6 in. broad, and walls 3 ft. thick. The arches spring from thick half-round shafts, resting upon square bases. The base moulding is the ordinary double round and hollow, of a late character. The capitals vary in pattern, but are of one date. The two southern arches, and the most eastern on the north side, are full-centred. The mouldings are, on the inner face, two angles replaced, the upper by a keel-shaped bead, and the lower by a round bead or roll. On the outer face is a mere rebate. There are plain half-round roll drips on each face. The fourth arch is pointed, and a Decorated insertion. In the south-east angle of the nave, high up, is the broken door of the rood-loft. The westward extension now in progress contains an excellent west window of three lights, and above a marigold opening, and there are two lateral windows of one-light each.

The *north aisle* is 36 ft. by 9 ft. 6 in., and has at its east end an arch into the tower, and above it the weather moulding of the original roof. In the west end is a pointed Norman window of 12 in. opening, in a deep recess, splayed and stepped up to the window. In the north wall near its east end is a modern memorial window. The north doorway is original. It is round-headed, and the two angles in the mouldings are replaced, the upper by a keel-shaped fillet, the lower by a roll, as in the nave. The arch springs from an abacus with a hollow chamfer. The doorway stands within an outer arch, also round-headed, and flanked by two nook-shafts, slender and detached, with stiff flowered caps and a central boss upon the shafts. The bases are concealed, but the whole is of a very late Norman and, in some respects, Early English character. The shafts are of white, the rest of red stone. There is no drip. There are traces of a porch, and possibly of a niche over the doorway; the porch is about to be replaced.

The west wall of this aisle is propped by a clumsy buttress, 3 ft. 6 in. broad by 4 ft. 6 in. deep, of two stages. It has been added to support the north wall. At the base of this wall is seen the original plinth. Inside are four corbels for the hammer-beams of the old high-pitched roof.

The *south aisle* is 37 ft. long by 9 ft. 6 in. At its east end a drop-arch, of the date of that below the nave and chancel, opens into the chancel aisle. It springs from the wall without jambs or shafts. In the inner wall are four corbels, as in the north aisle. In the west end is a window corresponding to that in the north aisle, and the line of the exterior plinth is also seen, though the projection has been cut away. The south wall is also original. In it, east of the door, is an original splayed loop with a trefoil head, each cusp terminating in a medallion like a draughtsman. East again of this is a flatted-topped late Perpendicular window of three lights, cinquefoiled. This has superseded a loop window, of which the splay and east jamb remain. At the east end of this wall is a small round-headed piscina, with traces of a cupboard above it. The south door is of the same general pattern with the north, but rather larger, and with different details. The doorway has a trefoiled head, with medallioned cusps, such as is seen in one of the upper chambers of Coningsburgh Castle. The flanking shafts are three-quarter engaged, and have no central boss, and the bases are higher. Outside the wall are two plain buttresses, 2 ft. broad by 4 ft. 6 in. deep. One marks the junction between the nave and chancel aisle, and seems Perpendicular; the other may be Decorated. A porch is to be placed on this side also.

The *tower* is about 17 ft. square at the base. It is of four stages, marked by three sets-off, reducing its summit to 14 ft. Its north-east angle is capped by two flat pilasters, one on each face, the two meeting to cover the angle, which is solid. There is a third pilaster on the west end of the north face. They have no set-off, but die into the set-off of the first-floor. The basement measures, inside, 11 ft. north and south by 10 ft. east and west. It has arches on its east, west, and south sides opening into the aisles and the chancel. Of these the western is 8 ft. span, high-pointed and plain, having a square rib between two angular recesses springing from a plain abacus with a hollow chamfer. Below are two coupled three-quarter shafts, placed on the inner face or soffit of the jambs. In the south face is a larger pointed arch of the full breadth of the chamber, and within it is seen the small round-headed arch of the chancel, against which the tower has been built. The arch opening eastward is also pointed, but lower, and of only 3 ft. opening. It springs from an abacus with a hollow chamfer. Above this arch is a small lancet window without a drip, and the angles of the recess are replaced by a roll, continued round the head, but broken by bases and caps at the arch-springing. The caps are of white stone. Outside, below this window, is seen the high-pitched weather-moulding of the chancel aisle.

In the north wall, high up, is a larger window, of one light, and slightly pointed, in a round-headed recess with a stepped cill. The opening is flanked by two slender engaged nook-shafts, with flowered caps and rather raised bases of Early English character, as is the central boss in each shaft. The shafts are of red stone, and parcel of the jambs; the bases and caps are white. Over all is a drip. The window is evidently of the date of the two doors. High up in the west wall is a small square-topped door, reduced in width at some very early period, from which a narrow mural stair ascends in the west wall to the first floor. It is lighted by a small west loop, and had also a door, now blocked, upon the nave roof.

In the first-floor of the tower, in the north wall, is a closed Norman recess, and in the east a square-topped loop.

In the second-floor are three original windows of two lights, with a central pier and flanking shafts. They stand within round-headed arches. In the south wall is a loop.

In the third-floor are four round-headed windows, small and plain, and above is a low solid parapet, probably of Decorated date, but after the original pattern.

The chancel is probably the oldest part of the structure, built in the Norman period without aisles, and with three looped windows high up in each side wall. Aisles were then added, the windows blocked, and the side arches cut, in the late Norman period, but since then the added aisles have been rebuilt on the old lines, the North in the Early English, and the south in the Decorated style, when the chancel arch and that between the south aisles were inserted. The chapel was probably also Decorated, but has been much altered, if not rebuilt.

The nave and its aisles and the tower were probably all built in the late Norman period. The nave possibly first, and there may have been triforial openings, as the aisles were unusually lofty. The font is Early English, a polygonal bowl with a central stem and shafts round it.

The material of the original chancel was a deep blood-red sandstone, much used in the Norman period. Altogether this is a most interesting little church, and its condition does infinite credit to the liberality and taste of the patron, and to the skill of Mr. Brandon, its restorer.

OBSERVER.

Bath. — The landslip which made itself apparent more than a year ago on the northern slope of the city of Bath is becoming more serious. A number of houses are dangerously affected by the subsidence, and the city surveyor has served a fresh batch of notices on owners, directing their attention to the unsafe condition of their tenements. Walcot Church has lately exhibited signs of a settlement. The Town Council has called in professional advice, and the continued slipping of the hill side over a considerable area, mainly covered with cottages occupied by artisans, is attributed to a current of water descending the hill to the river acting upon a substratum of sand and gravel.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

THE fourth annual conference of this Association commenced on the 19th inst., at Bristol, the meetings being held at the office of the Sanitary Authority, Prince-street. Mr. Lemon (Southampton) occupied the chair, amongst those present were:—Messrs. F. Ashmead, M.I.C.E., president-elect (Bristol); James Lemon, M.I.C.E., president for the past year (Southampton); Edward Prichard, C.E., vice-president and hon. district secretary for Midlands (Warwick); Charles Jones, C.E., general hon. secretary (Ealing); R. Vawser, C.E., assistant secretary of Lancashire and Cheshire (Warrington); E. B. Ellice Clark, C.E., assistant secretary for Home Counties (Hove); B. C. Cross, C.E., assistant secretary for Yorkshire (Dewsbury); and others.

It was agreed that the meeting for 1878 should be held in Liverpool.

The president (Mr. F. Ashmead) then took the chair, and delivered an inaugural address.

The reading of papers followed, the readers being Mr. F. Ashmead and Dr. Davies (medical officer of health for Bristol). Mr. Ashmead, in the course of his paper, remarked that the whole of the Bristol sewers were unventilated. This caused a considerable discussion, the general opinion being in favour of the ventilation system. Dr. Davies urged the value of distinct dwellings, and condemned the accumulation of families in one large building.

In the evening the members sat down to a banquet at the Clifton-down Hotel, under the presidency of Mr. Ashmead, and after dinner there were various complimentary toasts.

The reading of papers was resumed on the morning of the 20th inst.

Mr. W. W. Stoddart, F.G.S., F.C.S. (Bristol), city and county analyst, read an interesting paper on "The Water-bearing Strata of Bristol." Before commencing it he, however, referred to the discussion that took place on the previous day with reference to the ventilation of sewers. He said if those who so strongly condemned Mr. Ashmead's plan of non-ventilation lived in Bristol, and were well acquainted with its conformation, they would perhaps modify their views. The levels varied from 300 ft. above the mean sea level to 20 ft. below it. If the sewers were ventilated in some of the districts, they would require two or three Dr. Davies. Bristol was so peculiar in its geological formation that each district had to be separately dealt with, and Mr. Ashmead had a most difficult task. We extract the following from Mr. Stoddart's paper:—The great diversity in the geological formation of the ground on which Bristol and Clifton are built rendered the question of water supply a very important one. The strata might be arranged into four groups,—namely, first, inclined impervious beds; second, inclined impervious beds with numerous fissures; third, impervious horizontal beds; fourth, porous horizontal beds. The millstone grit and carboniferous limestone of Clifton and Kingsdown-parade were instanced as examples of the first group. Wells dug to catch the several springs almost depended for the purity of the water on the absence of dwellings on the top of the beds, because the water not being able to penetrate the strata found its way "between" them in an almost unfiltered state. A good instance of the unsafe condition of this state of things was mentioned by Mr. Stoddart in one of the city conduits, which comes from a spring that once was situated in the open country, but which now is extremely impure from being surrounded to a large extent by houses. Kingswood, Stapleton, and Fishponds were mentioned as illustrating the second group; and Keynsham, Bedminster, and Horfield the third. The centre of the city, with the parish of St. Paul, were given as examples of the fourth division. The different ways of contamination that affected potable waters under these varied circumstances were explained and proved by a long and exhaustive list of analyses that the author of the paper had made during the last twenty years. The paper concluded with a short description of the supply that the citizens of Bristol and Clifton now enjoy from the Waterworks, and the reasons were given why the water supplied could not be contaminated by drainage impurity. The city wells especially, being so subject to the infiltration of tidal water, as well as waste material from so populous a place, were all of them described as being impure, and access to a good supply of water from a long distance from Bristol was considered so

obvious a necessity that no argument was required on this point.

Mr. Lemon, referring to the ventilating of sewers question, said he disputed entirely that the sewers of Bristol were not ventilated, for if they were not they must have a perfect connexion with every house in the city, which they knew was impracticable. Those vent-holes caused ventilation, and he would rather that the gas came out in a proper way than on the sly. He proposed a vote of thanks to Mr. Stoddart.

Mr. Parry (Reading) seconded the motion, and said no doubt if Mr. Ashmead had had all the information that Mr. Stoddart could now give them twenty years ago, it would have influenced him in laying out the system of sewers.

Mr. Ellice Clark asked Mr. Stoddart his opinion, with reference to the theory of the oxydisation of sewage by its passing through water.

Mr. Stoddart, in reply, said he was not an engineer, and could not say whether there was a perfect non-ventilation of the sewers; all he could speak to was the effect upon the wells. Referring to the use of sewage on farms, he said he believed that the value of it was greatly exaggerated. As regarded oxydisation, he mentioned that the sewage of Bath was turned into the Avon; at Hanham it was found to be partially oxydised, and further down it became still more so, but there could not be a perfect oxydisation in so short a distance.

Mr. A. W. Parry (Reading) read a paper on the "Maintenance of Highways, Scavenging, Watering Roads, and Collection of House Refuse." In his opinion the work was better done by the authorities themselves than by contractors, and at a less cost.

A discussion took place, in which most of the speakers agreed with Mr. Parry.

Mr. Henry Masters (Bristol) explained his system of ventilating sewers, and the double-tank system.

Mr. Lobley explained Amsler's planometer,—an ingenious instrument for accurately measuring ground.

The meeting then adjourned, and in the afternoon visits were paid to various large manufacturing works in the city. On Saturday last a visit was paid to the Bristol Waterworks.

WATER WORKS FOR LONDON.

THE Water Examiner, Major Bolton, in his last report says:—

The Lambeth Company have finished their covered reservoir at Norwood; it is capable of holding 5,000,000 gallons, and has lately been brought into use. The company are giving constant supply in a number of courts and alleys. The alterations in fittings under the Board of Trade Rules and Regulations are being gradually effected as occasion offers, and are carried out in all new buildings. This company require an immediate extension of their area of filtration, to enable them to efficiently filter water during the prevalence of floods.

The Chelsea Company's new works at Molesey are rapidly approaching completion, and the concreting and paving of the inner slopes of the reservoirs is progressing. Two of the reservoirs will shortly be taken into use, one having been filled up during last month. The erection of the necessary engine power has been completed.

The companies that are actively moving in the matter, and giving constant supply under the provisions of the Metropolis Water Act, 1871, in a portion of their districts, are the Kent, New River, and East London. The Act provides power to compel all the companies to give constant supply as and when the public authorities may see fit to demand; but no company is compelled to give such constant supply if it can be shown by them that after the expiration of two months from the time of service of the requisition more than one-fifth of the premises in such district are not provided with the proper fittings, in accordance with the Regulations made under the above-mentioned Act.

The number of miles of streets which contain mains constantly charged and upon which hydrants for fire purposes could at once be fixed, in each district of the metropolis, is as follows:—Kent, 80 miles; New River, 175; East London, 85; Southwark and Vauxhall, 112½; West Middlesex, 70; Grand Junction, 41½; Lambeth, 70; Chelsea, 56: making a total length of 690 miles, and the Water Companies are ready to affix hydrants thereon when required by the authorities. The total number of hydrants erected is at present 4,279, of which 2,752 are for private purposes, 542 for street watering, 510 for public use, and 475 in Government establishments.

"SOUTH KENSINGTON."

SIR,—I am indebted to your courtesy for a copy of the *Builder* of this day's date (July 21st), containing some criticisms on an article written by me in the June number of the *Nineteenth Century* on South Kensington; and I lose no time in disclaiming the construction which you have placed on a passing remark in that article on the well-known phrase "Brompton Boilers," which phrase you state to have originated in the *Builder*.

The fact is, that, in penning that paragraph, the thought of connecting the *Builder* with the phase in question never entered by mind, and it is your remarks alone that recall to my recollection that which the present generation never knew till to-day,—that the phrase was first employed by you twenty-one years ago. I intended to refer to the systematic and long-continued use, in a hostile sense, to which it was turned by the many opponents of the Commissioners' schemes, of whose existence you are of course aware. You, in fact, observe yourself that "the designation stuck to" the building. Though invented by a friend, it was too epigrammatic not to be eagerly seized upon and *exploité* by the enemy, and it was of the enemy alone that I spoke.

If I had occasion to write the paragraph over again, I should gladly put it thus:—"In order to render the general scheme unpopular, the nickname of the 'Brompton Boilers' (originally invented by the *Builder* in no intentionally hostile spirit) was persistently applied by the Commissioners' foes to the temporary building," &c.

I am glad to take this opportunity of bearing testimony to the generous, but at the same time discriminating (and therefore especially valuable) support which the *Builder* has at all times given to the plans of the late Prince Consort and the Royal Commissioners of 1851.

EDGAR A. BOWRING.

P.S.—My remarks as to the whole South Kensington Estate lying exclusively in the two parishes of St. Margaret's, Westminster, and Kensington, and not in any parish of "Brompton" (to the parish church of which one portion is indeed nearly contiguous), are strictly accurate. (See Commissioners' Act of Parliament of 1854, and other official documents.) The point, however, is of infinitesimally small importance.*

WORKMEN'S CLUBS.

ON the 20th inst., the fifteenth annual meeting of the Working Men's Club and Institute Union, the Dean of Westminster, president, was held in the theatre of the Society of Arts, John-street, Adelphi. The object of the union, as our readers know, is to promote the social, mental, and moral welfare and recreation of the working classes by the establishment of clubs, institutes and libraries.

The report, which was read by Mr. Hodgson Pratt, entered in detail into its successful operations. The number of clubs and institutes established, which at the end of the first year was not more than fifty-four, of which half only were in the Union, was now 805, with an estimated membership of 133,000. The work in London and the provinces was described. The receipts during the year had been 1,536*l.*, and there was a balance in hand of nearly 100*l.*

Mr. Samuel Morley, M.P., moved the adoption of the report.

The Dean of Westminster made an interesting address at the close of the proceedings.

The Royal Savoy.—The buildings at the corner of Savoy-street, Strand, have recently been demolished, and the street is about to be widened and improved by the erection of a building, consisting of shops and offices, to be called the Royal Savoy Chambers. The architects are Messrs. A. & C. Harston. Adjoining these premises, the Art Union of London are about to erect offices and galleries, from the designs of Mr. E. M. Barry.

* We are very unwilling to seem contentious, but are forced to repeat, positively, that a considerable part of the land belonging to the Commissioners is in Brompton. There is no "parish" of Brompton. Brompton is a part of Kensington, and is a District for ecclesiastical purposes only.

THE ROMAN FORUM.

SIR,—Suppose it were known that Mr. A resided at No. 1 in a given street, and we found it recorded that B lived between A and C, might we not use this to prove that No. 2 was the house of B, as well as that No. 3 was the habitation of C, without laying ourselves open to the charge of arguing in a circle or ignorance of the simplest rules of logic?

So if Roman archæologists, starting from the Temple of Castor, use the *Monumentum Ancyranum* to identify the Basilica Julia as well as the Temple of Saturn, they are not fairly open on this account to the same imputation.

The argument is unquestionably sound with respect to the Basilica Julia, though there may be sufficient other grounds for its identification. With respect to the Temple of Saturn, it is doubtful whether Mr. F. M. Nichols (not Nicholls) has not, as well as some former writers, attributed too much weight to it. Becker pointed out long ago that, as the Temple of Vespasian did not exist in the time of Augustus, the B. Julia would then have been correctly described as between the temples of Castor and Saturn, whichever of the competing ruins might be supposed to represent the latter. But here also there is so much more evidence on the same side that the question may almost be regarded as beyond controversy.

The most conclusive argument is, perhaps, derived from the two fragments of the marble plan of Rome of the time of Severus, containing portions of a building lettered B——VLIA, and, upon one, part of a neighbouring building with the letters VRNI. Becker's objection that the letters B and VLIA are in different styles of writing, and that, therefore, the fragments do not represent parts of the same building, is met by the answer, which has not, I believe, hitherto been pointed out, that while one fragment is partly original and the other is a restoration from the Vatican drawings, we find that in the drawings the writing is in the same style on both, and differs from that of the original fragment (see Jordan, "Forma Urbis Romæ." Berlin. 1875). R. C. N.

CASES UNDER METROPOLITAN BUILDING ACT.

BAD BUILDING—A CAUTION TO BUILDERS.

ON the 26th ult., Mr. T. Stanway, the builder of Nos. 37–49, Shaftesbury-road, Hammersmith, appeared before Mr. Paget, at the Hammersmith Police-court, in answer to a summons taken out by Mr. Knightley, district surveyor of Hammersmith, requiring him to take down the south flank wall of No. 37, in consequence of having built it with broken bricks, not properly bonded and solidly put together, as required by the Building Act.

Mr. Knightley produced a sample of the broken bricks used in building the wall, and explained how impossible it was to form bonded work with such material, and side by side showed the method of bonding with bricks of the size specified by the Act. He had continually complained of defendant's buildings, but finding remonstrance useless, now asked the magistrate to order the demolition of the wall. He called, as witness, Mr. E. F. Roberts, a local architect and surveyor, who spoke to the bad quality of the work; and his assistant, who saw the sample taken from the building; and the magistrate, having expressed his intention of making an order unless defendant could bring evidence to alter it, he (defendant) applied for an adjournment, and paid costs, 30*s.* At the adjourned hearing, on the 17th inst., Mr. N. Basalgette, instructed by the Metropolitan Board of Works, appeared for Mr. Knightley, and Mr. Claydon for defendant, and cross-examination of defendant's witness proved nothing beyond confirming the belief in the mind of the magistrate that the walls were badly built. He summed up as follows:—The question before me is one of bare fact. Are these walls built in the manner specified by the Building Act,—that is to say, do the bricks overlap each other, and form bonded work; and are the bricks, as specified by the Act, not less than 8½ in. long? It has been shown there was a large quantity of broken bricks, or "bats" used. The district surveyor complained of this, gave notice to amend, and followed it up by a letter that such notice could not be waived; but defendant deliberately built the walls higher with the same bad material, in direct opposition to the proper authority. He, therefore, made an order as prayed, with general costs, amounting to 1*l.* 15*s.* 6*d.*

ROUSDON, DEVON.

On the 7th inst. the chief corner-stone of the belvidere of the large mansion now in course of erection for Sir Henry W. Peek, bart., M.P., was laid by his only son, Mr. Cuthbert Edgar Peek, who was presented by the 350 workmen engaged on the building with a silver trowel and a box of tools. The trowel was made by Messrs. Ellis, goldsmiths, of Exeter, from a drawing made by Mr. Ernest George, architect. The box and all the tools (consisting of mallets, square, level, chisels, &c.) were made by the men engaged on the works. The whole of the workmen afterwards rode to Musbury, a village about four miles distant, where they were liberally entertained at dinner, at the cost of Sir Henry Peek.

The mansion at Rousdon when completed bids fair to be one of the most important and extensive in England. Built upon the high ground, immediately over the sea, and located almost midway between Lyme Regis, on the Dorset, and Seaton, on the Devonshire, coast, the site and its surroundings possess great natural beauties, whilst the grouping of the mansion, built in the Baronial style, is highly picturesque. Purbeck stone and flint are the chief materials used, whilst in the gables half-timbered oakwork is freely used, the panelling therein being all filled with sgraffito work. The roofs are covered with warm-coloured tiles.

The architects for the work are Messrs. Ernest George & Peto, the contractors being Messrs. Moass & Redway, of Exeter; and the carving and sgraffito work are being executed by Mr. Harry Hems. The resident clerk of works is Mr. Prosser, and Mr. John Shore is the foreman. It is hoped that by the latter end of next year the works may be completed.

"TWO-HOUR STUDIES."

SIR,—It would appear from a paragraph in the *Times* that Mr. Legros has been kind enough to give some of his two-hour studies to the South Kensington Art Department. Whether this gift was solicited, or volunteered, we do not gather, but we assume that it was solicited. It is, therefore, a public matter, and open to criticism.

The question respecting the merits of these studies is one which lies quite outside and apart from that which, I think, may very properly be raised as to whether it be a wise proceeding to encourage haste, by any example whatever, in a country wherein art for the most part has a tendency to slightness and to hurry. Art is not a matter of Hey! presto! All great work has been deliberate, well-considered work The facility which some of the famous and dexterous portrait-painters exhibited came of long study and practice. The facility which comes of long and patient study is that facility alone which is of any value. Completeness, and not sketchiness, ought to be the object of true art. A clever sketch made by a student in two hours, which no amount of after-painting would ever make excellent, will be of no value either to him or to art.

That craze of ours for "dashing off" work had, I had thought, been sufficiently chided and checked by the precept and example of the pre-Raffaelites. If there were a virtue in pre-Raffaelitism, it was that of the inculcation of care and patience. Moreover, the partisans of that movement had the example of the greatest painters to encourage deliberate painstaking. Look at the studies made by the great masters for their works, often with the silver point; how delicate and *correct* they are! There is about them no sign of dash—of bombast.

We English have got some ridiculous notion about bold drawing; by bold drawing is meant a daring surcharged outline, brought out in shading with thunderings of black. This is the *vidi terribile* and *grandiose*, and very terrible it is. Now the grandeur of Michelangelo's works was not due to "the sweep of line" of the acute critic, but to the mental conception, and to the *correct* drawing. There is feeble drawing, there is *correct* drawing, and there is impudent drawing, and, for that matter, painting, too. "Boldness" in the English vocabulary of art, although it be not writ down so, is synonymous with impudence. For if "boldness" mean any greater surcharge of line, any extravagance of effect, beyond what is just and *correct*, it must mean the very bragadoccio and impertinence of art.

There is no more a royal road to art than to the mathematics. When shall we learn that its study should be a common sense and straightforward pursuit, and that even the "ingenium" can never be crowned with success unless the "labor" lead it on to victory?

W. CAVE THOMAS.

MONUMENTAL.

Bearwood.—On the 30th ult. was unveiled the monument erected in St. Catherine's Church, Bearwood, by the members of the Royal Humane Society to the memory of the late Mr. John Balston Walter (eldest son of Mr. John Walter, M.P.), who, it will be remembered, lost his life in saving his younger brother and cousin on the frozen lake in Bearwood Park on Christmas Eve, 1870. The memorial, which is about 6 ft. in height, was executed by the late Mr. Matthew Noble, sculptor, shortly before his death. It is constructed of Carrara marble, and is in *alto relievo*. The scene on the lake is illustrated on the base, and above an angel points towards heaven, while on the pedestal is the following inscription, written by the Dean of Westminster, the chairman of the memorial committee:—

"Many waters cannot quench love,
Neither can the floods drown it."
Canticles viii. 7.

This monument was erected by the members of the Royal Humane Society,
To the memory of
JOHN BALSTON WALTER,
Eldest son of John Walter, esq., M.P., Bearwood,
In recognition of his having risked and lost his life whilst rendering assistance to his brother and cousin on the frozen lake in his father's park, on Christmas Eve, 1870, two days after his return home from long and perilous travels,
In the 26th year of his age,
Leaving to his family and friends the blessed remembrance of a manly, industrious, blameless youth, and the bright promise of a useful, honourable, Christian manhood.

"So Lycidas sank low, but mounted high
Through the dear might of Him who walked the waves."

St. Paul's Cathedral.—On the 12th inst. a marble memorial of the officers, non-commissioned officers, and privates of the 57th (West Middlesex) Regiment of Foot was unveiled in St. Paul's Cathedral. It consists of a group representing "Christ the Comforter." The central figure is sitting in the centre of a group of the infirm, the sorrowing, and the weak,—to whom he tenders consolation. Overhead are two angels with outspread wings, bearing a boldly-designed scroll with the words,—"Grave, where is thy victory; death, where is thy sting?" The fourth verse of the fifth chapter of Matthew,—"Blessed are they that mourn, for they shall be comforted,"—is traced in a straight line below. Beneath the memorial is a marble space wrought into emblems of warfare,—the customary drums, shakoes, and sword-hilts, bordered with furled flags and garlanded with immortelles,—and bearing on it the number of the regiment and its honours. The sculptor was Mr. Forsyth, of Camden Town.

Halifax.—There has lately been erected in Lister-lane Cemetery, Halifax, a monument to the memory of the late Robert Midgley and his wife, of Salterlee, Northowram, at the expense of their children. The style is Early Decorated. Upon a square base and sur-base, stands the first stage, which is arcaded, with carved flowers in the mouldings, resting on red granite columns with carved caps, and having a crocketed gable over with carved finial, behind which is a sunk and moulded panel on each face, one bearing the inscription. The second stage by a bold splay is brought to the octagon, and has a sunk and moulded panel with cusped heads, over which is an arcade with crocketed gablet, carried by banded grey granite shafts on each face. From this stage springs a spire richly crocketed with finial at the apex. The whole stands over 20 ft. high, and has been executed and fixed by Mr. Richard Harvey, of Halifax, from the designs of Messrs. Jackson & Fox, architects.

Berlin.—A monument is now being erected in the Thiergarten of Berlin to the memory of Queen Louise, the consort of Frederick William III. The monument is being executed in marble. A sum of 48,729 marks has been raised towards its erection by private subscription. Whatever more the structure may cost will be defrayed by the city of Berlin.

Worcester.—A memorial has just been placed in Worcester Cathedral in memory of the late Dean Peel. The late Dr. Peel erected the reredos in the cathedral in memory of his deceased wife. In the flat alabaster back of the reredos the present memorial has been placed. The subject is a Grand Cross, having the Lamb, or "Agnus Dei," in a *vesica piscis*, occupying the centre of the composition, with the symbols of the four evangelists at the corners of the space, the whole being bound together and enriched with elaborate foliage of an early character. Running along the lower part is the commemorative inscription. As the alabaster did not admit of being worked in relief, the design has been incised. It is worked in gold and colour, and was carried out by Messrs. John Hardman & Co., of Birmingham.

Macclesfield.—On the 28th ult., the monument which has been erected in memory of the late Dr. Hall, of St. Alban's Roman Catholic Church, Macclesfield, was formally unveiled. The monument is a canopied tomb, with a series of floriated Gothic arches, the base being embellished by sculptured panels, while incised in the marble slab beneath the canopy is a representation of the recumbent figure of Dr. Hall in full ecclesiastical costume. The monument (the design of Mr. J. F. A. Lynch, of Macclesfied) has been executed by Mr. Hilton, of Manchester.

Bedford Leigh.—The committee for erecting the Middlehurst memorial at Bedford Leigh, Lancashire, have selected the design of Mr. J. F. A. Lynch, of Macclesfield. The monument is to include a statue (life size) of the Rev. Mr. Middlehurst, standing on a base having eight elaborately carved panels, approached by steps and surmounted by a canopy supported on four columns with carved capitals; the shafts will be of red Aberdeen granite; the roof finishing in a spiral form surmounted by a cross.

SCHOOL BOARD SCHOOLS.

Rotherham.—The Board have decided to erect schools at Thornhill to accommodate 225 boys, 225 girls, and 250 infants. Messrs. Tacon & Rawson, of Rotherham, architects to the Board, have been instructed to prepare the necessary plans for them.

Patcham.—New Board schools have recently been opened at Patcham, near Brighton. They stand on a site adjoining the old National Schools. One of the schools is for boys and girls, and the other for infants; the two together accommodating 140 children, of which number 102 are already on the register. The schools, and the master's house adjoining, were built by Mr. G. R. Lockyer, of Brighton, from the plans of Mr. G. Tappen, of the same town. The cost, including fittings, &c., was 1,590*l.*

Hollingbourne.—New Board schools are in course of erection at Hollingbourne, Kent. The buildings, which will be of brick, and gable-roofed, will consist of a principal schoolroom, 46 ft. by 18 ft., with 20 ft. pitch, a class-room, and an infants' school, 24 ft. by 17 ft. There are also separate residences for the master and mistress, and extensive playgrounds. The contract is in the hands of Mr. H. Bridge, builder, of Maidstone, and the plans have been prepared by Mr. G. Ruck, architect, also of Maidstone.

Huntingdon.—A new Board school is about to be erected at Huntingdon, at a cost of 1,000*l.* Mr. W. Lewis, of York, is the architect, and Mr. H. Creaser the builder.

Aston.—On the 27th ult., the memorial stone of the Alma-street Board schools, Aston, was laid. The buildings will be Gothic in style. The principal block, consisting of boys' and girls' schools, will front to Alma-street, and contain, on the ground-floor, general room for boys, three class-rooms, master's room, lavatory, and cloak-rooms; and the girls' school, which is on the first-floor, contains similar accommodation to that of the boys, with the addition of a teachers' and sewing rooms. The infants' school is situated in the rear, and contains large room, 70 ft. by 34 ft.; babies' room, two class-rooms, and mistress's room. The warming will be by Haden's principle of warm air and warm water combined. The architect is Mr. William Jenkins, of Birmingham, whose designs were selected in limited competition. The builders are Messrs. Surman & Son, whose contract amounts to the sum of 9,187*l.*

Radford.—The foundation-stone of new Board schools at Radford, Notts, was laid on the 22nd ult. Mr. R. C. Sutton is the architect.

Crook and Helmington Row.—On the 14th inst. the foundation stones of two new Board schools were laid at Crook and Helmington Row, in the county of Durham. The ceremony at Crook was performed by Mr. Arthur Pease. The new school is to cost about 3,575*l.*, the building to be semi-Gothic in style. The principal rooms are to be

110 ft. by 20 ft. wide, and 74 ft. by 20 ft. The reading and class rooms are to be 18 ft. by 19 ft. Mr. Graham, of Sunnyside, is architect for the schools, and Mr. A. Kellett, of Crook, builder. The laying of the foundation-stone at Helmington was performed by Mr. H. F. Pease. The school is to cost 3,170*l*, Mr. W. Walton being the contractor for the masonry. The building is to be in the Gothic style. The large room will be 70 ft. long by 20 ft. wide, the next 56 ft. long by 20 ft. wide, and the reading and class rooms 20 ft. by 12 ft. and 19 ft. by 20 ft. respectively.

Stokenchurch (*Oxon*).—On the 16th inst. the foundation-stone of new Board Schools here was laid by Major Tane. The new building will comprise mixed schools for 160 children, and teacher's residence. The materials used will be flints, with random brick dressings and slated roofs. The contractors are Messrs. Taylor & Grist, of Bierton, near Aylesbury, at the sum of 1,849*l*., and the architect is Mr. Arthur Vernon, of High Wycombe.

ANNUAL CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

LLANGOLLEN is the place fixed on, and the following will be the proceedings of the Congress:—

Monday, August 27th.—Opening meeting at the County Hall, Llangollen, at 5·30 p.m. Members and visitors will then be conducted to Plas Newydd, formerly the residence of the "Ladies of Llangollen," where General Yorke will take them over the house and grounds. Public dinner in Assembly-room. Inaugural speeches, &c.

Tuesday.—Members and visitors, at 9·30 a.m., will ascend the Castell Dinas Bran, and inspect the ruins, which will be described, and then leave Llangollen at 12·30 p.m., arriving at Wrexham at 1·5 p.m., when the Church will be described by Mr. B. Ferrey, F.S.A., and commented on by others. Luncheon at Wrexham. Afterwards to Gresford Church, &c., and return to Wrexham for the 6·25 p.m. train, arriving at Llangollen at 7 p.m. for evening meeting.

Wednesday.—Leave Llangollen at 10 a.m. in carriages for inspection of Offa's Dyke, which will be explained by Mr. J. Tom Burgess, F.S.A., and others; then to visit Chirk Castle, by the permission of R. Myddleton Biddulph. Luncheon at Chirk, and then in carriages by Pont Cysylltau, to visit Valle Crucis Abbey, and Elisig's Pillar. The Abbey will be described by Mr. Loftus Brock, F.S.A., and commented on by Mr. Wynne, M.A., F.S.A.; Mr. Bloxam, F.S.A., will give the history of Elisig's Pillar; then return to Llangollen. Evening meeting at 8·30.

Thursday.—Leave in carriages at 10 a.m., and visit the site of Owen Glendower's House, (Sychant), Mound, and Farm, on which Mr. George R. Wright, F.S.A., will make some observations, and then on to Corwen Church, Rûg Chapel, which will be described by the Rev. W. Richardson, B.A. Ascent of the Caer, an ancient British encampment afterwards. Luncheon at Corwen. Return to Llangollen for evening meeting.

Friday.—Proceed by special train to Dolgelly, at 8·45 a.m., for a visit to the remains of Cymmer Abbey, Abbot's House, &c., which will be commented on by Mr. Wynne, and the architectural features pointed out by Messrs. John Reynolds and Loftus Brock, and others. Luncheon at the Golden Lion Hotel, Dolgelly. At 2 p.m. the party will proceed by special train to Bala; and there carriages will convey them to the ancient Manor House of Rhiwaedog, which will be described; then to Palé, the seat of Mr. Robertson, M.P., and Llanderfel Church. Special train to leave Llanderfel at 6·30, arriving at Llangollen for evening meeting.

Saturday, Sept. 1.—VALE OF CLWYD.—Leave by train at 9·50 a.m. for Llanrhaiadr, *viâ* Corwen. On arrival at the station, carriages will be in readiness to convey the members and visitors to the church, where will be found some ancient painted glass windows, &c., and then on to Denbigh, for luncheon at the Town-hall. The castle will afterwards be visited and described, and the party will leave by train for Derwen Church, where will be seen a rood-loft and screen, and an ancient cross and lych-gate in the churchyard, &c. Leave Derwen by special train at 6·35, arriving at Llangollen for the evening meeting.

Monday.—Leave by train to Mostyn at 9 a.m. for the examination of library, &c., at Mostyn Hall, by the express permission of Lord Mostyn; afterwards it is proposed to visit the remains of Basingwerk Abbey and the Holy Well of St. Winifred, and return to Llangollen in time for the closing meeting and reading of papers.

METROPOLITAN STREET IMPROVEMENTS AND ARTISANS' DWELLINGS.

ON Monday, the 16th inst., before the House of Lords' Committee on opposed Bills, Lord Hardinge in the chair, the preamble was proved with amendments, of the Metropolitan Street Improvements Bill, brought from the Commons. The labouring-class displacement question formed the chief feature of the inquiry. Amended returns were put in showing that within the limits of the proposed scheme there were, roughly computed, 10,000 of the labouring class, of whom from two-thirds to three-fourths would be displaced. Including artisans the 10,000 mounted up to 15,000; and a clause will be added to the Bill providing "that before the Metropolitan Board of Works, under the powers of this Act, shall take down fifteen or more houses occupied wholly or partially by persons of the labouring class, they shall prove to the satisfaction of one of Her Majesty's principal Secretaries of State (Home Department) that they have provided either on the lands coloured blue (Gray's-inn-road) on the deposited plans, or on lands elsewhere in London, as the Secretary of State shall approve, sufficient accommodation in suitable dwellings for the persons whom they may so displace." It was stated that these displacements were a source of great difficulty to the Metropolitan Board, capitalists and builders being reluctant to take up the appropriated sites. The sites, therefore, had to be let or sold at reduced valuations, and it was estimated that under the present Bill 60,000*l*. would be deducted from what would otherwise be the commercial value of such of the lands as were set apart for labourers' dwellings. The estimated gross cost of the entire scheme authorised by the Bill was 3,630,470*l*., and after allowing for recoupments, the net cost would be 2,694,740*l*. Seven years was the period specified within which the work could be carried out. The Honourable Miss Stanley, Alderman Sir S. H. Waterlow, M.P., Mr. West, Q.C., and many others were called by the latter to prove the hardship the displacements would inflict on the artisan class, especially where the principal West-end improvements are to be carried out, and the committee, on the suggestion of Alderman Sir S. H. Waterlow, M.P., determined to add words to the above clause, rendering it still more onerous in its operation. The Gray's-inn-road Spur (Exmouth-street) was rejected on the opposition of Mr. J. Early Cooke, which reduces the gross estimate by 135,000*l*. and the net estimate by 90,000*l*.

BUILDERS' BENEVOLENT INSTITUTION.

THE thirtieth annual general meeting of this Institution was held on Thursday at Willis's Rooms, St. James's. The treasurer, Mr. Geo. Plucknett (of the firm of Cubitt & Co.), in the chair.

The annual report congratulated the subscribers and donors upon the satisfactory position of the Institution. Through the energetic appeal made by the president (Mr. Charles B. Waller) on the occasion of the annual dinner in November last, the donations then obtained were very liberal; and as the Court of Chancery had sanctioned the transfer of the "Building Fund" to the General Relief Fund, the amount now invested in the Three per Cent. Consols was 20,292*l*. 13*s*. 7*d*. Such being the case, the committee felt they could safely recommend that all future donations should be expended instead of being funded, and that the amount of the pensions should be increased. As to legacies, it was proposed to fund them as heretofore. The report also recommended that the widow of a pensioner should receive a woman's pension on the death of her husband, in lieu of, as at present, receiving the half-pension until elected a full pensioner upon the funds of the charity. These alterations will be very advantageous to the recipients, and it is hoped that the donors and subscribers will do their utmost to enable the committee to carry them out. The committee report, with much satisfaction, that Mrs. Larner (lately a pensioner) has been enabled, from altered circumstances, to withdraw from receiving her pension, and that she has, with feelings of gratitude, presented the Institution with a donation of five guineas. Five pensioners were elected during the past year, and six have died. The thanks of the committee are due to the secretary for the ball, Mr. F. W. Keeble, for the interest he took in making it a success, by which the sum of 54*l*. 3*s*. was realised. The annual dinner will take place on November 8th.

The report having been unanimously adopted, the meeting sanctioned, *nem. con.*, the alteration and revision of the rules of the Institution. By Rule I., as amended, the men's pensions are increased from 24*l*. to 30*l*. per annum, and the women's pensions from 20*l*. to 24*l*.

Votes of thanks to the patrons, vice-presidents, committee, trustees, treasurer, and auditors, and to the president for the past year, were duly accorded; and the officers and committee for the ensuing year were elected.

On the motion of the Chairman, Mr. William Higgs,—a gentleman well known and respected in the building trade,—was unanimously elected President of the Institution for the ensuing year, and thus terminated one of the most important and satisfactory meetings in the history of the Institution, inasmuch as it marks the commencement of a new (and, we sincerely hope, increasingly prosperous) epoch in its affairs.

KENSINGTON VESTRY HALL COMPETITION.

THE Vestry on Wednesday, 25th inst., selected designs bearing the following mottoes, which, in their judgment, are best suited for the purpose required:—

"Experientia."—Robert Walker, F.R.I.B.A.
"Expert."—John J. Thomson & Fred. Davis.
"Experience."—Edward C. Robins, F.R.I.B.A.

Inasmuch, however, as considerable doubt exists as to the possibility of either of the selected designs being carried out for the sum of 18,000*l*., named in the particulars issued, the architects are to be called upon to show clearly that the building can be erected in accordance with their respective designs within a reasonable limit of the sum named.

The Vestry awarded an extra prize of thirty guineas to the author of the design marked "Cavendo Tutus,"—Frederick Mew.

MARBLES.

SIR,—I find it very difficult to get to see various marbles to study. The Geological Museum is the only exhibition I know of the kind open to the public; but it contains only a few of the marbles in general use, having no black and gold, Sienna, Sicilian, Egyptian green, Verde antique, jasper, Brigga-di-Carra, and numerous others. Will any of your readers oblige by informing me of any building containing them where I should be able to obtain admittance? A MARBLER.

CHURCH-BUILDING NEWS.

Kemble (*Wilts*).—On the 8th inst. the parish church of All Saints, Kemble, Wilts, was re-opened, after being rebuilt from the foundations at the sole cost of the patroness of the living, Miss Gordon. The works have been carried out from the designs of Messrs. Medland & Son, architects, of Gloucester. The works comprise the taking down the chancel, which was built about the year 1840 quite out of harmony with the remainder of the church, and the building of a new chancel, in Thirteenth-Century Gothic, of the same size and form as the old, with richly-moulded lancet windows and Purbeck marble shafts, tile wall decoration by Maw & Co., at the eastend containing Creed, Lord's Prayer, Ten Commandments, and the words over the Holy Table, "This do in remembrance of Me"; new oak Holy Table and Glastonbury chairs, presented by Mr. W. Price Jones, of Elm-green; velvet covering for Holy Table, elaborately worked, and "a fair white linen cloth," the offering of the Misses Price Jones. The tile floors are by Mr. Godwin, of Lugwardine. The restoration further comprised the taking down of the south or Ewen aisle, stated to be of the fifteenth century, the south porch, thirteenth century; and north chapel, twelfth century; the whole of which were in a most ruinous condition; and the rebuilding of the whole, replacing every stone in the exact position whence it came, and only renewing such stones as were absolutely decayed. The porch and north chapel have been entirely re-roofed and new north doorway and rose-window have been added to the north chapel, which will now be used as a vestry. The quaint little three-light lancet window, which a tradition in the village relates was brought from Salisbury

Cathedral, and the Transitional south archway, have been carefully replaced in their original positions. The nave has been re-roofed and a new aisle added on the north side of the nave, lighted by three-light lancet windows and divided from the nave by an arcade of two arches, in exact conformity with the ancient ones which divide the nave from the Ewen aisle on the south side, supported by a Pennant stone shaft. The church throughout has been refloored, and re-seated with pitch pine. Porritt's underground stove has been adopted for warming the church. Messrs. Medland & Son's plans have been carried out by the contractors, Messrs. Wall & Hook, of Brimscombe, who had for their foreman Mr. Thomas Whiting.

Woodstock.—A meeting of the committee for the restoration of Woodstock parish church was held on the 7th inst., to receive tenders for the restoration of the parish church. The portions of the church to be now commenced are:—1. North aisle clearstory; 2. Nave, south aisle, and groundwork; 3. Floors, and reseating. The contract of Mr. Groves, of Milton-under-Wychwood, Oxon, was accepted, the amount being 3,918*l.* 1*s.* 11*d.*

Brampton.—The foundation-stone of a new church at Brampton, Cumberland, was laid on the 12th inst. by Mr. George Howard. The church will be Gothic in style, and will consist of a nave, two aisles, and a chancel. Its length is 97 ft. wide, and its breadth 60 ft. 10 in. outside. The interior width of the nave is 20 ft. 6 in.; the north aisle, 15 ft. 1 in.; and the south aisle, 15 ft. 9 in. From the floor to the top of the nave, in the centre of the building, the height is 40 ft. The length of the chancel is 41 ft. There are to be two vestries, an upper and a lower; and at the west end the plans show a tower and a spire, but in all probability the spire will not be erected at present, as the funds will not allow of it. The new church will accommodate 500 people. Much of the material of the old church, which has been pulled down, is being used in the erection of the new one, and the whole of the building will be of red freestone. The estimated cost is nearly 9,000*l.* The architect is Mr. Webb, of London; and the contractors for the whole of the work are Messrs. Beaty, Brothers, Carlisle. Mr. Morland is clerk of the works.

Books Received.

A Hand-book to the Public Picture Galleries of Europe, with a brief Sketch of the various Schools of Painting, from the Thirteenth Century to the Eighteenth inclusive. By KATE THOMPSON. London: Macmillan & Co. 1877.

THIS very compact book is, as we learn from the preface, the result of notes taken by the authoress when visiting the principal picture galleries of Europe with her father, Sir Henry Thompson, during five successive seasons; not originally with any view to publication, which was an afterthought, arising from the suggestion of Mr. G. Grove. What Miss Thompson has endeavoured to accomplish has been an examination of all the chief picture-galleries of Europe, and most of the smaller ones, so as to be able to point out the principal and most interesting pictures in each, adding their numbers and titles from the local catalogue: and a brief historical sketch of the principal European schools of art down to the end of the last century, with a few biographical records of each of the principal masters. To this is added a chronological table of the dates of the birth and death, so far as they are known, of every painter of eminence.

The book is very systematically arranged. First comes the list of museums and galleries named in the book, grouped under the headings of their various countries, and followed by a list of authorities consulted. Then follows the bulk of the hand-book in the shape of a brief history of each national school or schools of painting, which is really a series of brief comments on the style of each eminent painter, with mention of two or three leading facts of his life, the whole assuming the form of a continuous narrative; but the names of the painters being inserted in the margin of the paragraph devoted to each, so as to be easily found when wanted. The chronological table of the painters of each nation follows the history of each national style: while the latter portion, consisting of about half the volume, is occupied by the catalogues of the principal galleries all over Europe, with the numbers of the pictures on the walls or in the catalogue given wherever practicable.

This is a very complete system, and the book is really a most useful one for those who, not knowing much about painting critically or historically, wish to examine foreign galleries systematically, and in a complete and comprehending manner. The book will not be less useful to the majority, from the fact that it is not calculated for students so much as for everyday observers. A book was rather required which would give this class of readers good and trustworthy general information about pictures and picture-galleries. Miss Thompson does not diverge into criticism much, contenting herself for the most part with a general statement as to the position in art of the painter of whom she is speaking, and his leading characteristics, which are described in the main well and correctly; and there is a quiet sensible tone, and absence of verbiage or superfluous remarks, which is very satisfactory to the reader. The book is, however, rather a memorandum and guide as to facts than a work suggesting anything like thoughtful or profound criticism, and occasionally, as in her brief remark about Blake, the authoress falls short of appreciating or sympathising with her subject. For general readers, travellers, &c., the book is really what it professes to be,—an intelligible and complete handbook, very well carried out.

Christian Gravestones. Illustrated by 150 Examples, in which Suitability of Purpose and Expression have been especially considered. Designed by WILLIAM SHARP OGDEN, author of "Studies in Mercantile Architecture." London: Batsford. Manchester: John Heywood.

THIS is a collection of lithographed designs for gravestones, chiefly elevations on a small scale, with the sections of mouldings roughly given in black shading; not quite clearly enough, in some cases, to enable any one working the mouldings to gather precisely the intention of the designer as to detail, though the general idea is clear enough. The author says that he has endeavoured to work out certain principles which he thinks should be observed in designs of this class, viz.: "simplicity of outline, severity of detail, and a general motive of design in which the cross or other Christian emblem, monogram, or text are leading features," and adds, that "*style*, as generally understood, and as the expression of various systems of thought, is intentionally avoided, the object being to obtain an elastic and harmonious combination of workable detail, at once effective, inexpensive, and durable."

Looking at the designs in the light of these remarks we can readily perceive in what way the author has aimed at carrying out the principles here expressed, and to which, theoretically, we make no objection. But we should say he had somewhat deceived himself in regard to the realisation of these principles. Referring, in the first place, to the statement as to the avoidance of special style: where this is most prominently realised, it seems only to amount to the union of certain features of Classic with certain features of Gothic architecture. But, in fact, for the most part the designs do appear to us to be in a style, and that not a general style but a local one. As there is, or at least was, a Manchester school of politics, so there is, as it seems to us, a Manchester school of architectural detail. When we noticed some time since the same author's painstaking and elaborate set of designs suggesting treatment for mercantile architecture, we noticed the prevalence of this Manchester manner; and it is one which we can only admire with a great deal of reservation. There is a sort of "go" and effectiveness about it, but a great want of refinement and repose. The prominent characteristics seem to be a great love of the chamfer system of ornament, employed in every kind of varied manner, in some cases clever and effective, but producing an impression angular and fidgety to a degree. This is the impression, we must say, which these designs for head-stones give us. Certainly we cannot say that simplicity of outline is the characteristic of a great number of them; and even when the outline as drawn appears to merit this description, a perspective view of the design might give a very different impression; for it is one of the stumbling-blocks of the chamferesque school of design that it is capable of being worked into forms which appear very pretty and symmetrical in geometrical drawing, but are by no means so satisfactory when seen in perspective. Then in regard to severity and durable character in detail, we gather from the drawings that a good deal of the surface ornament is incised, filled in black, in a manner which has become prevalent of late; at least, we presume the ornaments in thin lines which appear on so many of the designs are intended to be produced in this way. This method of ornamentation is really anything but durable or monumental in character, nor can it be said to realise severity of effect: rather the contrary; it produces a thin wiry prettiness, and is not in keeping with that masonic feeling which should govern the treatment of a monolithic design. In some designs where this is avoided the effect is better; in the two upper head-stones on plate 4, and the stone with a solid cross worked upon it in plate 9, for example.

A good many of the designs are suggestive of novel treatment, which might perhaps be realised with more of repose of effect than is shown here, and we give Mr. Ogden full credit for ingenuity and for a good deal of pains expended in working out varieties of "chamferesque" design. But, in fact, there is a limit to the successful use of this method of producing ornamental expression, and the collection of designs in question conveys to us the impression of a straining after novelty in the mere shape of the head-stones, resulting too often in the production of forms which are simply odd and unusual, without being either pleasing or in any special degree suitable for their purpose: such forms as the middle one, on plate 7, for instance, those on plate 18, and the lower ones on plate 20, and a good many others, appear simply odd and unusual, and certainly are not beautiful. Our impression is that Mr. Ogden might do better things than these, if he would get rid of the influence of the rather bad local taste which seems to form his style, and cultivate more breadth and simplicity of manner in designing, and make less effort to appear original, which is often a very different thing from being so.

Miscellanea.

"Miniature Aquariums."—The Southwark and Vauxhall Water Company are too enterprising by half, according to statements made at the meeting of the Lambeth Vestry on the 19th inst. Mr. F. H. Fowler called attention to the allegation that living organisms were being found in the water supplied by the Southwark and Vauxhall Company. It was most important at this time of the year that water should be pure. The water supplied by the Lambeth Company, he believed, passed muster, and this he attributed to the provision of sufficient filtering-beds. The medical officer stated that so far as the "living organisms" spoken of were concerned, he had not seen them. These organisms were only revealed by very high microscopic power, which power he did not possess; but if the Vestry thought it was advisable he should report upon the relative purity of the water of the two companies, he would attend to the matter. He thought it was very much to be regretted that these alarming statements about "living organisms" went forth, leading to the inference that they were very dangerous to health. It was probable that they might not be dangerous at all. Mr. Hill said he did not know where the medical officer of health had taken his water from, but he (the speaker) certainly thought these "living organisms" did not require the microscope to disclose them; nor did they require a young person's eyes, for they were "magnificent animals." In fact, a tumblerful of water was a sort of "Brighton Aquarium in miniature." There ought really to be some action taken in the matter. Ultimately it was decided that the medical officer should make a report to the Vestry as to the state of the water supplied to the parish by the Southwark and Vauxhall Water Company.

Somerset House.—An accident occurred at Somerset House last week. A portion of the balustrade surrounding the square gave way, and fell over on to the area below, where it was shattered to fragments. This floor, which is on a level with the cellars and underground portions of Somerset House, is accessible in some places by flights of steps, and is frequently used as a passage. Fortunately, at the spot where the fall occurred there is a small garden, in which no one happened to be at the time.

Our Water-supply System.—Commenting on a letter in our columns, signed "George Mitchell" (p. 668, *ante*), the *Sanitary Record* says,—"We believe that the case just stated is only one example of a great number of similar instances. First, as to the practice of the water companies. We believe most of these bodies claim the right to demand their rates in advance,—on what ground of justice or equity we do not pretend to say. We do not remember whether this claim has ever been supported by a legal decision in favour of the companies, but it is altogether opposed to the practice of other trading corporations, and it is certainly a most inequitable claim. The claim, however, is not enforced in the case of those of the general body of water-consumers, who are known to rate-collectors as 'respectable payers,' and some of the companies, in the case of these 'respectable payers,' are content to collect the rates for the half-year, after they have become really due, instead of in advance. In the case of the poor, however, the companies are more exacting, and in the instance under discussion it would appear that the water was cut off on the plea that a rate due,—that is to say, due in advance,—had not been paid. Now, if the case as we have given it be substantiated,—and, judging from other and similar instances, there seems no reason to doubt in the least the statements to which our contemporary has given publicity,—it reveals what is nothing less than a scandal, and shows the dangerous unwisdom of permitting the water-supply of the metropolis to remain in the irresponsible hands of private companies."

"Steam Superseded." — The death is announced of Mr. William Wallwork, who was engaged maturing an invention which he styled "a new motive power, to supersede steam," and which it is stated he completed about six days before his death took place. It is stated positively that the machine has been worked by Mr. Parr, and fully justifies what Mr. Wallwork had stated to him it would do. Its power, he stated, was unlimited,—of course increasing the strength of the material,—and at a trial it blew off air at a pressure of 40 lb., as tested by a patent steam gauge. Mr. Mason (says the *Pendlebury Times*) is patenting the invention,—which is extremely simple in construction, and is a wonder to those who have witnessed it how it has been kept so many years in abeyance,—at a considerable cost in all countries. It will be put to a large engine this week and tried practically in the place of steam. Having no fire, of course it emits no smoke, works without noise, and the first machine, it is said, will do the work of a 50-horse power engine, yet it takes up so little room that on Wednesday morning a light cart and one horse carried all away, including the patterns. If all this turns out to be correct we may look for a revolution in the engineering and manufacturing world; and Mr. Mason, a practical man, is sanguine as to the results.

Government Offices in London. — The select committee appointed to inquire into the annual expenditure on public offices and buildings have presented their report to Parliament. They state that at the present time 20,080*l.* are paid annually for the hire of houses for the use of the public departments at the West End of London, and that the evidence taken by the committee shows that, independently of the deficient accommodation, the system of hiring, when applied to the great departments, is unsatisfactory. They call attention to three plans for the concentration of certain public departments which have been submitted to them, and, in conclusion, remark that,—"they cannot too strongly insist on the expediency of the Government losing no time in proposing some plan by which the evils complained of may be remedied." It is their opinion that "delay will lead to greater expense in the future, and that immediate action is demanded for the efficiency and comfort of the public departments and the dignity of the country."

The Haymarket, Oxendon-street, Presbyterian Church.—On Saturday the foundation-stone of a new Presbyterian church, on the slope of Haverstock-hill, was laid. The church is being erected by the Presbyterian congregation formerly worshipping at the old church in Oxendon-street, Haymarket, near Leicester-square, the site of which has been built upon by the Civil Service Supply Association. The church was founded by Richard Baxter, author of "Baxter's Saint's Everlasting Rest," in the year 1676.

The Consumption of Coal.—From the recently-issued returns of the Government Inspectors of Mines, showing the quantity of coal raised in the kingdom for the year 1876, it appears that the consumption at home does not increase, but, on the contrary, has diminished. This result is opposed to the views of the Select Committee on Coal, whose Report, dated July, 1873, states that as the coal for domestic use is generally estimated at one ton per head of the whole population, "the future increase under this head may be expected to coincide with the increase of population." And further, "as regards the future exportation of coal, although a very large increase has taken place within the period embraced in the preceding table, yet there is reason to doubt whether much further increase will take place in this direction." From the Inspectors' Reports, however, it appears that the quantity of coal raised in 1876 was only 818,681 tons more than 1875. On the other hand, the exports of coal in 1876 were 16,265,839 tons, against 14,554,919 tons in the previous year, or an increase of 1,720,920 tons. If from this increase are deducted 818,681 tons, the excess of the yield of 1876 over that of 1875, there is left a deficit in the home consumption for last year of 902,239 tons.

The Fatal Fall of Houses in Bethnal Green-road.—Mr. Donaldson has held an inquest relative to the deaths of William Henry Hare, aged 32, a solicitor's clerk, and Henry Savage, 14, a printer's assistant, who were killed on Tuesday week by the falling of some houses in the Bethnal Green-road. Mr. Alfred Barker, of the firm of Irons & Co., building material dealers, said that he had just left off work at a neighbouring house, and hearing a great crash, looked up and saw the premises coming down. He and his men had been at work on them, and had removed the lead, tiles, sashes, and frames, part of the flooring and the roof, but the brickwork had not been touched. The houses were three-storied, 35 ft. in height, the front wall being only 9 in. thick, and he should think about a century old. Mr. Stuart Barker, auctioneer, said that he was employed by the Metropolitan Board of Works to take charge of the demolition of this property. It had been sold to a number of parties; but, according to the conditions of sale, the houses had to be taken down in a prescribed order, and that order had in this case been fully observed. The jury returned a verdict of "Accidental death."

Cleopatra's Needle. — The *Times* correspondent at Alexandria says,—"Mr. Waynman Dixon, the engineer who is conducting the removal of the English obelisk, a gentleman known in archæological circles for his interesting discoveries at the Great Pyramid, has found a curious inscription at the base of the sister obelisk known as Cleopatra's Needle. It stands on a huge square block of granite, but originally was supported by four bronze crabs, one at each corner. Three of the crabs are gone, but on the fourth, which still remains, Mr. Dixon has found an inscription duplicated in Greek and Latin, to the effect that the obelisk was placed in its present position in the eighth year of Augustus Cæsar, when Barbarus was Prefect, and Pontius, the architect, raised the stone. This puts the date of erection of our obelisk about B.C. 19, some fifteen hundred years after the stone was cut and carried up the river past Thebes, in the days of Thothmes III."

Unhealthy Dwellings in Lambeth. — At the last meeting of the Lambeth Vestry, the Sewer and Sanitary Committee reported that the Medical Officer had revisited the blocks of dwellings he last year selected for demolition under the Artisans' and Labourers' Dwellings Act, and the result of a house-to-house inspection was that the following places were found unfit for human habitation:—Salutation-place, Windmill-row, Great and Little Windmill streets, and Broad-street, including a large number of courts. It was resolved that the report be forwarded to the Metropolitan Board of Works.

The Proposed India Museum.—The London correspondent of the *Liverpool Journal*, who appears to be usually well-informed, writes:—"Lovers of architecture are already beginning to be anxious about the proposed India Museum. It is, I believe, now definitely to be raised on the Victoria Embankment, and, I hear, is to be in the Palladian style. Will it be an ornament to the Embankment, I wonder—and I fear? The Ceylon Legislative Council has voted 15,000*l.* towards the expenses."

Cannon-street and Charing-cross Foot Bridges. — Mr. J. Willing writes:—"Having become the lessee of the tolls of several of the bridges, and amongst them the foot-bridge over the Thames at Cannon-street Station, I have, since the 12th inst., thrown it open to the public, thus giving the free use of the shortest route between the Surrey side and the main thoroughfares of the City, which, I trust, will afford some relief to the foot traffic over London Bridge. I take the opportunity of notifying with regard to Hungerford Bridge that an entrance is now being made from the Embankment, and within a few days that will be open, and give the nearest and most direct way from Charing-cross to the Surrey side." Mr. Willing is to be commended for his enterprise, but we hope he will not seek to recoup himself for the abolition of the tolls by further disfiguring the already too-ugly bridges in question with the glaring "posters" with which he "doth give us bold advertisement" on the London hoardings.

Election of Borough Engineer, Newcastle-on-Tyne.—At a meeting of the Town Council on the 18th inst., the town clerk submitted the names of the following six selected candidates for the office of borough engineer:—Ernest Benedict (38 years of age), London; Alfred M. Fowler (40), borough engineer of Salford; Arthur Jacob (45), engineer to the Barrow-in-Furness corporation; H. U. McKie (54), city surveyor, Carlisle; J. P. Spencer, borough engineer of Tynemouth; B. P. Stockman, London, in private practice. A letter was read from Mr. McKie, withdrawing his candidature. The voting was then taken as follows:—For Mr. Fowler, 29; for Mr. Benedict, 9; for Mr. Spencer, 4; for Mr. Jacob, 1. A resolution was passed declaring Mr. Fowler elected, the engagement to be terminated by a six months' notice from either side.

London Bridge.—At a special meeting of the Court of Common Council on the 18th inst., Mr. McGeorge, as chairman of the Bridge-house Estates Committee, proposed the adoption of a report upon the opinions of the law officers, recommending that the committee should be authorised to take the necessary steps to obtain Parliamentary powers for raising upon the credit of the Bridge-house Estates the requisite funds for increasing the width of London Bridge. Several members expressed a strong opinion that the pressure of traffic was felt more in the approaches than on the bridge itself, and that the projected improvement would not remedy this evil; but ultimately the report was adopted.

Steam Tramways in Dublin.—In Dublin, on the 25th inst., the first public trial of Hughes's steam tramway engine was made in connexion with vehicles of the Dublin Tramway Company. The new locomotive presents the appearance of a miniature tram-car, fitted with curtained plate-glass windows, and a small funnel rising about 9 in. above the roof. The carriage and engine weigh 4½ tons. The engine is ten-horse power, and drew sixty-five persons with the greatest of ease at from ten to twelve miles an hour. It was brought to a standstill within its own length. Messrs. Abbott & Duncan, the proprietors, have resolved to go to Parliament for a Bill to legalise the use of steam power between Blackrock and Dublin.

Surplus Funds, Exhibition of 1851.—On the 20th inst., a deputation representing great provincial centres waited upon the Prince of Wales, at Marlborough House, to urge upon his Royal Highness, as President of the Commissioners for the Exhibition of 1851, that the surplus funds at disposal of the Commissioners should be applied in the promotion of science and art in the country at large, as well as in the metropolis, by the establishment and supply of museums. His Royal Highness, with whom was Lord Granville, promised that the best consideration of the Commissioners should be given to the views of the deputation.

The Soldiers and Sailors' Memorial, Boston, U.S.A. — Two large bronze figures, representing Peace and History, have just been shipped, by the steam-ship *Batavia*, for Boston. They were modelled by Mr. Martin Milmore, at his studio in Rome, and cast by Messrs. Cox & Sons, at their bronze foundry, Thames Ditton. These complete the above important memorial of the war between the North and South. The monument, which consists of a large column, ornamented with nine figures, trophies, wreaths, and several bas-reliefs, all in bronze, is to be unveiled in September next.

Home Hospitals for the Well-to-Do.—Last week a meeting of the committee recently appointed to consider the scheme for the promotion of Home Hospitals for the Well-to-Do was held in the Venetian Parlour of the Mansion-house, under the presidency of the Duke of Northumberland. It was resolved to establish an association to provide homes, which should be self-supporting, for the treatment and cure of disease, as in hospitals, by skilled nursing, rest, and regulated diet, under proper sanitary and hygienic conditions, with the comforts of home, for the benefit of all classes when attacked by illness, who could afford to pay in various degree for such advantages. For that purpose the committee decided to make an appeal to the public for funds—say 20,000*l.*,—to enable them to open one or more homes fitted with every comfort and requirement which science and forethought could suggest.

Disinfection and Sanitation.—We have had our attention called to the patent appliances of the Disinfection and Sanitary Works Company, Limited, and their mode appears so simple and efficacious for preventing the escape of sewer and other noxious gases into houses, and securing immunity from the foul odours arising from drains and water-closets, that persons who study their health, and have a regard for household comfort, would do well to call at the office of the company (Queen Victoria-street), simply to see their "automatic disinfector" in operation. As an efficient and practical method of purifying and disinfecting the atmosphere of private houses, it seems to us well deserving of attention.

TENDERS.

For paving the footways of the Albion-gardens, Hammersmith, for the Fulham Board of Works:—

Val de Travers	£167	0	0
Société Française des Asphaltes	120	0	0
Brunswick Rock Asphalt Co. (accepted)	100	0	0

For alterations, 177, East India-road, for Mr. Hall. Messrs. A. & C. Harston, architects:—

Johnson	£322	3	0
Sheffield (accepted)	297	0	0

For alterations, 175, East India-road, for Mr. Chapman. Messrs. A. & C. Harston, architects:—

Wood & Sleap (accepted)	£165	0	0

For enlargement of boiler-house, Stepney Union Workhouse, Bromley. Messrs. A. & C. Harston, architects:—

Seward	£181	0	0
Heiser	165	0	0
Le Frere (not in attendance)	148	0	0

For building new coach-house and stables in Amhurst Park-road, Stamford-hill, for Mr. R. Ellis. Mr. Wm. Eve, architect:—

Crabb	£350	0	0
Salt	245	0	0
Herne	244	0	0
High & Co. (accepted)	232	0	0

For the erection of stabling and coach-houses at Central-hill, Norwood, for Mr. T. J. White. Messrs. Selby & Rogers, architects:—

Hitchcock (accepted)	£700	0	0

For stabling at Leigham Court-road, Streatham. Henry Hall, architect. Quantities by Messrs. Selby & Rogers:—

Walker	£670	0	0
Lister	595	0	0
Smith	586	0	0
Mason	579	0	0
M'Lachlan	563	0	0
Hitchcock (accepted)	526	10	0

For completion of St. Mark's Tower, Dalston. Mr. J. L. Blackburn, architect:—

Stamp & Bowtle	£2,917	0	0
Boyce	2,544	0	0
Forrest	2,456	0	0
Winship	2,256	0	0
Cook	2,193	0	0

For erecting business premises at Croydon. Quantities not supplied:—

Ridge (accepted)	£1,204	0	0

For the erection of house, St. Lawrence, for Mr. Spain. Mr. W. S. Barwick, architect:—

Port	£399	10	0
Duckett	398	0	0
Bugden	367	10	0
Mitchell	325	0	0
Newby	281	0	0

For the erection of four cottages at Bryant's-place, Strood, City of Rochester. Mr. J. H. Andrews, architect:—

Gates	£919	0	0
West (accepted)	8 0	0	0
Jeffrey	796	0	0

For the erection of workshops, club, and institute, with dwelling-house attached, St. Peter's, Vauxhall, for the Rector and Building Committee. Mr. E. R. Blatchley, architect. Quantities by Mr. C. W. Heward:—

	Institute.	Dwelling.
Moy	£2,200	£1,450
Josolyne	2,037	1,293
Colls & Sons	1,987	1,277
Stimpson & Co.	1,988	1,270
Downs	1,890	1,350

For rebuilding the Boys' Refuge, Great Queen-street, Lincoln's Inn-fields, for the committee. Messrs. E. Habershon & Brock, architects:—

Coleman	£8,579	0	0
Browne & Robinson	8,356	0	0
Julian & Co.	8,355	0	0
Nightingale	8,058	0	0
M'Lachlan	7,960	0	0
Bowman	7,900	0	0
Mattock Brothers	7,833	0	0
Brass	7,698	0	0
Haynes	7, 00	0	0
Newman & Mann	6,725	0	0

For restoring warehouses for Messrs. Jones Brothers, Slate Merchants, City Basin. Mr. Owen Lewis, architect. Quantities not supplied:—

Bullock	£875	0	0
Roberts & Co.	838	0	0
Grove	797	0	0
Bowden	785	0	0
Sabey & Son	700	0	0
Blandford & Co.	760	0	0

For fifteen pairs villa residences at Sutton, for Mr. C. Argles. Messrs. Raggett, Williams, & Beadon, architects. Quantities prepared by Mr. Alfred Boxall:—

Priddle	£27,500	0	0
Harman	26,639	0	0
Jarvis	26,276	0	0
Cowland Brothers	26,090	0	0

For sundry repairs to St. Mark's Church, Myddelton-square:—

Browne & Robinson	£397	0	0
Cowland Brothers	374	0	0

For erection of St. Peter's vicarage, Saffron-hill. Mr. G. Lansdown, architect:—

Wagstaff	£3,204	0	0
Bird	3,149	0	0
Cowland Brothers	3,047	0	0

For cleaning and painting works at Christ's Hospital, Newgate-street. Mr. Thomas Renton, architect:—

Shaw	£735	0	0
Morby	715	0	0
Hayward & Son	700	0	0
Patman & Fotheringham	685	0	0
Pitman & Cuthbertson (accepted)	610	0	0

For house and offices at Kingston-hill, for Dr. Kane. Mr. Henry Macaulay, architect. Quantities by Mr. Alfred Boxall:—

Wells	£2,550	0	0
Oldridge	2,463	0	0
Todd & Saunders	2,437	0	0
Jarvis	2 375	0	0
Lane (accepted)	2,306	0	0

For erection of club building, Northumberland-square, North Shields. Mr. H. Miller, architect:—

Chapman & Sons	£3,200	0	0
Shotton	2,598	8	4
Sopwith & Kent	2,549	16	0
Miller	2,425	15	0
Bolton (accepted)	2,395	0	0

For alterations and repairs at 21, Woburn-square, for the Misses Thomson. Messrs. Tarring & Wilkinson, architects:—

Henson	£320	0	0
Phillips & Son (accepted)	301	7	3
Decoration.			
Phillips & Son	231	0	0

For additions and alterations at No. 16, Kensington Palace Gardens. Mr. Charles Barry, architect:—

Trollope & Sons	£10,990	0	0
Holland & Hanten	10,961	0	0
Fish	10,770	0	0
Dowes	10,680	0	0
Perry	10,415	0	0
Peto Brothers (accepted)	8,887	0	0

For erection of house at Ascot, for Mr. Bowen May. Mr. R. Adolphus Came, architect. Quantities supplied:—

Simpson	£2,931	0	0
Phillipson	2,696	0	0
Pither	2,692	0	0
Kearley	2,689	0	0
Yardley	2,633	0	0

For the erection of additional wing at the Cavendish College, Cambridge, for the College Association. Messrs. John Giles & Gough, architects:—

Bell & Son	£9,151	0	0
Hook & Oldrey	8,781	0	0
Bayes Bros. & Allen	8,755	0	0
Lovatt	8,245	0	0
Pattinson Brothers	8,180	0	0
Sharman	8,090	0	0

For Mr. Budd's shop at Walthamstow for "Mitchell, 3,300*l.*," read Gibbon & Mitchell, 3,300*l.*

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